Podcasts Developed through the Successive Approximation Model 1 (SAM 1): A Tool for Teaching Research to Broadcasting Students

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***Abstract*—This educational design research study aimed to develop and evaluate podcasts for the academic course Research in Broadcasting, Interactive and Emerging Media (BR 218). The iterative process of Successive Approximation Model 1 (SAM 1) was employed, and students' learning experiences were studied. Three groups participated in the study across three iterations. Semi-structured interviews with learners and evaluations by experts were conducted. The WVSU Evaluation Form for Non-Printed Instructional Materials (EFNPIM) was used in the evaluation. Findings revealed three major themes surrounding the recent learners' experiences in the course BR 218: (1) broadcasting students' research journey, (2) group research dynamics, and (3) complex research concepts. The educational podcast consisted of various episodes produced iteratively by the students with the course facilitator. Researchcaster, the resulting podcast channel, was launched via the platform Spotify for Podcasters. Experts rated the educational podcast to be very acceptable across all categories, confirming its adherence to standards and suitability for education. The results demonstrate that educational podcasts are useful learning tools in broadcasting research courses, offering valuable insights for future instructional and curriculum innovations. Integrating educational podcasts into various courses other than broadcasting, collaborating with professional content creators to enhance podcast content, and advocating for support from school administrators and the Commission on Higher Education are recommended. Lastly, future research is suggested on exploring and expanding the current findings about educational podcast development and utilization.**

***Keywords*—educational podcast, developmental research, broadcasting, curriculum innovation**

I. Introduction

Learning in the new normal has revolutionized education, giving rise to various challenges that students must face as they adapt to flexible learning methods while benefiting from innovative digital teaching approaches [1, 2]. The pandemic, Covid-19, prompted the development of functional digital teaching methods to ensure continuity of fulfilling Sustainable Development Goal (SDG) No. 4: ensuring inclusive, quality education, and lifelong learning opportunities [3]. In response, the Philippines' Commission on Higher Education recommended integrating digital tools (e.g., podcasts) into the curriculum to support learning continuity and adaptability in the evolving educational landscape [4, 5]. This study explores the possibility and versatility of using podcasts as instructional tools in research education, leveraging their popularity and potential to enhance learning experiences, particularly in broadcasting.

The significant increase in podcast engagement in the Philippines, especially among *GenZs*, underscores the timeliness of utilizing podcasts in higher education [6]. By integrating podcasting—an emerging media technology—into the curriculum, the researchers hope to enhance broadcasting graduates' satisfaction with their IT knowledge and skills, particularly in using recording and editing software. This approach seeks to better align the graduates' competencies with the demands of the broadcasting industry [7].

Furthermore, student-produced podcasts offer a flexible and engaging learning option, supporting the learning outcomes of courses like Research in Broadcasting, Interactive, and Emerging Media [8, 9]. Podcasting for instructional purposes motivates students to be creative and innovative in research, as it caters to West Visayas State University's vision to become a research university advancing quality education toward societal transformation and global recognition.

Driven by learning theories such as Constructionism, Meaningful Learning Theory, and E-learning Theory, this study adopts Michael Allen's Successive Approximation Model (SAM) and the CIPP framework to design, develop, and evaluate educational podcasts [10–12]. The iterative process ensures continual improvement and alignment with student needs and course objectives, ultimately enhancing the overall educational experience in research education [13, 14].

Course instructors and facilitators, especially those teaching Research in Broadcasting, might find value in the conclusions and outcomes of this study. This facilitates the retrieval of factual information regarding the application of podcasts in a particular course. Curriculum designers and developers may use the results of this research to reevaluate, examine, and even potentially modify existing curricula for the appropriate course.

Conducting research on the use of podcasts in various academic fields, other than broadcasting, is also significant for various reasons. Studies have shown that podcasts can improve comprehension and retention of complex material [15], and allows educators to tailor content to meet diverse learning needs [16]. Furthermore, investigating the effectiveness of podcasts encourages innovation in teaching practices, fostering more interactive and dynamic learning environments [17]. It also addresses accessibility, making

educational content more available to students with varying schedules and learning preferences [18]. Finally, by providing evidence-based insights, research supports the integration of podcasts into curricula, promoting lifelong learning and professional development [19].

Despite existing research, there is still a scarcity of studies specifically examining podcasting as a pedagogical tool in broadcasting education. Most studies focus on other fields, like medical or general education [20], highlighting a need for targeted investigations into podcasts' unique benefits for broadcasting. Additionally, there is a lack of research on using podcasts to teach specific broadcasting skills [21]. Many studies offer only short-term insights, with few conducting longitudinal analyses to assess long-term retention of information and skill acquisition [20].

Considering the significance and gaps mentioned, this current paper presents a new set of empirical data that examines podcasts in the context of education in a relatively longer and iterative process. This, in turn, contributes to the existing body of knowledge about the topic and fills the gaps in research in podcast use in broadcasting studies.

This study aimed to explore the development of educational podcast and its features in line with research in broadcasting based on the learning experiences of the students. It also aims to assess the acceptability of the developed materials. Specifically, this study sought answers to the following questions.

1) What are the learning experiences of broadcasting students in Research in Broadcasting, Interactive, and Emerging Media Course?
2) What educational podcast and its features can be developed based on the learning experiences of broadcasting students?
3) How acceptable is the educational podcast and its features as evaluated by experts in terms of a) content, b) instructional quality, c) technical quality, d) presentation and organization, and e) accuracy and up-to-datedness of information?

This paper is organized following rigorous steps and measures. The review of related literature provides a comprehensive analysis of existing studies and theoretical frameworks relevant to the development and evaluation of educational podcasts in the context of broadcasting research. The methodology section outlines the research participants, the data gathering instruments employed for data collection, and the ethical considerations involved. It also details the research procedure, which is structured according to the Successive Approximation Model 1 (SAM1), ensuring a systematic approach to the study. Following this, the results and discussion section presents the findings about the research questions, leading to a definitive conclusion that synthesizes the key insights of the study.

II. Review of Related Literature

The pandemic has compelled universities to transition to a new normal in learning, leading higher education to increasingly rely on technology for remote, flexible, blended, and online classes. This drastic change has significantly changed students' learning experiences compared to traditional settings. In the Philippines, negative learning experiences are often linked to limited access to technology, technical issues with Learning Management Systems (LMS), and slow internet connections [1, 22]. Additionally, learning from home has contributed to these negative experiences, as many homes are not conducive to effective learning [23, 24]. It is noteworthy that the negative learning experiences of students in higher institutions abroad, amidst the pandemic, were mostly social and psychological like feeling disconnected, isolated, nervous, overloaded, distracted, and increasingly stressed [25, 26]. On the other hand, positive learning experiences were also notable such as the opportunity for learners to work part-time [1]; and more academic considerations extended by teachers [22].

The pandemic may have drastically changed the landscape of education but it has opened more opportunities to explore innovative teaching strategies applicable in the new normal. With this, teachers must revolutionize the instructional designs to make remote learning more engaging in asynchronous and synchronous approaches; in order to keep students more motivated to learn [27].

A course in higher education that should be given attention in terms of innovative teaching strategies, especially in the new normal, is research. The important role of research in community development makes it an invaluable subject to explore [28]. Even in the Philippine's higher education, research is now continuously emphasized by improving the research capabilities of the faculty, staff, and students. How research is taught and delivered (remotely or face to face) in higher education institutions should also be reviewed intensively to look into more appropriate and meaningful learning approaches that can be applied in the present times. Learning approaches such as active learning [29], reflection on action [30], development of instructional materials for research courses [31–33], and even the integration of emerging technology such as podcasting [34–36] are being practiced by different academic institutions around the world. However, there is still a need to exert more effort in teaching research because students see research as a challenging course to pursue. The negative attitude of students toward research is more prevalent than positive ones [37–39] and this was even heightened because of the pandemic [40, 41]. Several studies reveal that students display a positive attitude towards research if they consider research as an important aspect of their lives [42]. Hence, it is critical for educators to design research instruction where practical and important applications of the course in learners' daily lives are embedded explicitly.

Students' attitudes towards research may be influenced by how research instructors and mentors motivate the learners. Students with research instructors who are motivating, supportive, and competent tend to accomplish their research work successfully [38, 43, 44]. This implies that teaching research goes beyond content teaching. Other factors that can contribute to transforming negative attitudes to positive attitudes may include exploring external learning approaches like technology and social media.

The integration of various technological approaches has now been explored in research education. To cite an example, previous studies have shown that innovative activities

incorporating podcasting in research were viewed to be effective and meaningful [34–36].

The education field has now embraced the use of podcasts in the delivery of instruction. The varied formats [45], ease in production, [46–48], flexibility, and audience reach [49] of podcasts inspired more academic institutions to use podcasting as part of their instructional design. Although the use of podcasts has limitations because of its audio format nature [50], the popularity of podcast integration in instruction still continue to rise.

It has been observed that educators view podcasting as having an impact on teaching and learning activities [51–55]. Lately, more studies have emerged regarding the effectiveness of teacher-produced podcasts in higher education and it was found that podcast listening among students resulted in more interaction, increased participation, and greater satisfaction with the course [56–58].

In the Philippines, podcasting was also explored in teaching other courses such as science [59–61]. Even during the pandemic, the use of podcasts has been very helpful in the delivery of instruction in distance learning modality [62]. The use of teacher-produced podcasts as instructional material is very notable. However, there is limited literature on how student-produced podcasts affect the learning process.

A few studies have attempted to look into the benefits of student-produced podcasts on students' learning experiences. Some studies showed that students gained benefits and skills from the experience of creating podcasts used in learning [63, 64].

Conversely, there are also drawbacks in developing student-produced podcasts such as time management, minimal experience with the technology, and decline of attendance [65, 66]. Nonetheless, these drawbacks can be managed if a framework for the effective design and quality use of podcasts is developed [67], especially when considering students' needs and participation [68].

Several theories govern the fundamental variables and objectives of this study: constructionism, meaningful learning theory, and e-learning theory. In podcasting, constructionism is evident because students actively create content—researching, scripting, and editing—which promotes deeper understanding of broadcasting concepts [69]. In addition, podcasts allow students to explore real-world broadcasting examples, facilitating critical reflection and meaningful learning experiences [70]. This demonstrates the essence of meaningful learning theory. Lastly, podcasts follow the e-learning theory by consistently showing its effectivity in offering flexibility, accommodating various learning styles and increasing student engagement [71]. Integrating these theories into the aims of this study opened a clearer path to attaining the goals and output of the study.

Even so, careful planning is inarguably needed in designing instruction and teaching-learning activities, especially with the integration of technology such as the use of podcasts [72]. A systematic process should be followed which may include the analysis of the learners, the instructional intervention, and evaluation [73]. The Successive Approximation Model (SAM) is an instructional design model which can serve as a framework in developing an agile and rapid instructional tool. This is a simplified version of the Analysis, Design, Development, Implementation and Evaluation (ADDIE) Model which emphasizes more on the iterative and cursive process [74]. SAM has two variants: SAM 1 and SAM 2. SAM 1 follows the simple iterative process of evaluation, design, and development [75], while SAM 2 involves the three phases of preparation, iterative design, and iterative development [76–78]. This type of a rapid prototyping model which is cyclically iterated was reported to be efficient in developing an instructional tool [79, 80] such as educational podcasts. For this study, SAM 1 was utilized.

Fig. 1 presents the first version of Successive Approximation Model (SAM1).

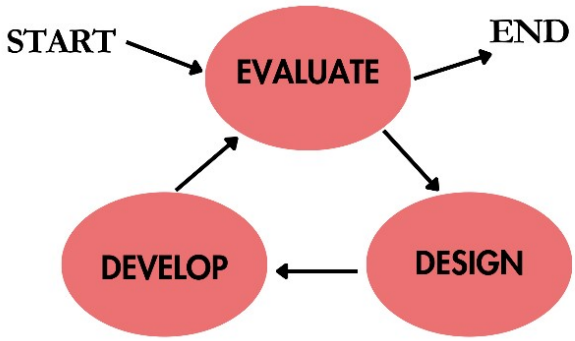

Fig. 1. The successive approximation Model 1.

III. Methodology

This study was guided by the Educational Design Research (EDR). EDR is a systematic study of designing, developing, and evaluating educational interventions such as programs, teaching-learning strategies and materials, products and systems [81]. For McKenny and Reeves [82], EDR's commitment to developing theoretical insights and practical solutions in real-world contexts with stakeholders is what sets it apart from other research approaches.

EDR provides a meaningful link between research and practice, and this can be achieved through the collaboration of practitioners and researchers in the identification of teaching and learning problems, the development of prototype solutions to the problem based on existing design principles, and testing and refinement of prototype solutions and the design principles upon which they are based [83].

Like all systematic educational and instructional design, this study underwent a cyclical instructional design process. The analysis, design, evaluation, and revision activities were the foci until the intended ideals and realization were achieved [81].

The Successive Approximation Model 1 (SAM1), utilizing the basic iterative process of *evaluate, design, and develop*, served as the blueprint for the development of the educational podcasts and their features.

A. Research Participants

There were three groups of participants in this study based on the three iterations.

For the first iteration, participants were four (4) recent learners previously enrolled in the course Research in Broadcasting, Interactive, and Emerging Media (BR 218), the instructional designer and subject matter expert, and the

prototype developer. The four recent learners were fourth-year broadcasting students who have completed and passed the course. The four participants were purposively chosen according to the following criteria: a) two of them must belong to the same student block or section, b) they must belong to different research groups, and c) they must be willing to participate in the conduct of the interview. The four learners (Participants A, B, C, and D) were individually interviewed focusing on their learning experiences in the course BR 218. Their answers were analyzed and, data collected served as a guide to be used by the instructional designer and subject matter expert in designing instructional activities incorporating podcast episodes. With the help of the prototype developer, the instructional designer and subject matter expert developed a prototype podcast episode that served as a sample for the next iteration process.

The second iteration involved all learners currently enrolled in the course BR 218. They were third-year students and were tasked to evaluate the prototype educational podcast. Based on their feedback, they designed and developed their own podcast episodes. They were also involved in the assignment of the podcast channel name. Both instructional designer and subject matter expert validated the podcast episode content and format.

During the third iteration, all the current learners, the instructional designer and subject matter expert, and the instructional design experts were involved. The current learners listened to the podcast episodes that they produced themselves. The feedback then served as the basis of the instructional designer, subject matter expert, and prototype developer in designing and developing a podcast channel. This is where all the educational podcast episodes are hosted. Six (6) experts evaluated the educational podcast channel, which was titled *Researchcaster*. These six evaluators, who were chosen purposively, are experts in curriculum development, educational technology, and learning content. The inclusion criteria in selecting the evaluators are the following: a) at least a PhD degree holder in the fields of curriculum development, information technology, educational technology, and communication research or allied fields, or b) faculty members who have taught educational technology or curriculum-related courses, information technology, and communication research, or c) designated as curriculum coordinator/director, instructional material evaluator, or head of the communication research department/program in a higher education institution.

B. The Research Instruments

Several research instruments were used in this study. A semi-structured interview guide was used during the in-depth interview and the WVSU Evaluation Form for Non-Printed Instructional Materials (EFNPIM) was used by the expert evaluators to evaluate the podcast channel.

Semi-structured interview guide for in-depth interview. This was administered to the four recent learners of the course Research in Broadcasting, Interactive, and Emerging Media Course (BR 218). During the interview, students were given freedom to expand their answers for the pre-defined questions about their learning experiences. Follow-up questions were asked to further investigate their learning experiences. The interview guide was divided into three parts: 1) introduction, 2) learning experiences in the course Research in Broadcasting, Interactive, and Emerging Media, and 3) closing. Experts in research, communication, and education validated the interview guide.

Evaluation Form for Non-Printed Instructional Materials. This evaluation form was adapted from the West Visayas State University Office of the Director of Instruction, Document No. WVSU-ODI-SOI-05-F02. It is the standard institutional form used by the university to evaluate various aspects of non-printed instructional materials. The instrument has been institutionally validated and subjected to reliability testing, demonstrating its reliability and validity in assessing instructional materials. The evaluation criteria include content, instructional quality, technical quality, presentation and organization, and assessment. Additionally, this instrument has undergone a validation process. The validity of the evaluation instrument was conducted through expert review, pilot testing with a representative sample, and statistical analysis to ensure its effectiveness in measuring desired outcomes.

In refining the research instrument, it's essential to note that certain elements were deliberately excluded. This choice was made after careful evaluation, recognizing that these aspects were not applicable to the unique nature of podcasts as a nonprint instructional medium. The adjustments were intended to ensure that the instrument effectively reflects the distinct characteristics of podcasting in delivering educational content. The experts who evaluated the podcast channel accomplished the instrument. The evaluators looked into the acceptability of educational podcasts as instructional tools in teaching research based on five aspects: content, instructional quality, technical quality, presentation and organization, and accuracy and up-to-datedness of information. The evaluator's rating for each item was given corresponding numerical weight and description as follows: "5"—Very Acceptable (VA), "4"—Acceptable (A), "3"—Moderately Acceptable (MA), "2"—Barely Acceptable (BA), and "1"—Not Acceptable (NA).

C. Data Collection Procedure

The process underwent three iterations. Iteration 1 was a teacher-led activity. Iteration 2 was a student-led activity, and Iteration 3 was the development of the final product. The final product is the podcast channel, *Researchcaster*.

First Iteration. This was a teacher-led activity which started with the evaluation. This involved the analysis of learning experiences of four recent learners in the BR 218 Course. During that time, the mode of learning at West Visayas State University was still remote/online modality (i.e., a combination of synchronous and asynchronous classes). These learners were previously enrolled in Research in Broadcasting, Interactive, and Emerging Media in the 2nd semester of Academic Year 2021–2022. They were interviewed individually on March 30–31, 2023. They were asked about their experiences in studying the course BR 218 in a remote/online modality, major challenges they encountered, effective class strategies they experienced, and research concepts that they found helpful or difficult.

Data gathered from the in-depth interviews were assessed.

This information were then utilized as inputs in the design of the prototype podcast episode for research. Challenging learning experiences were jotted down. These learning experiences were broken down into 15 topics for the 15 podcast episodes. Out of the 15 episodes listed, one topic was selected to be produced as the podcast prototype. The instructional designer and subject matter expert wrote a script intended for a podcast discussion format. In this format, the host and the guest conversed about the chosen topic for that specific episode. The prototype developer assisted the instructional designer and subject matter expert in recording and editing the prototype podcast episode.

During in-depth interview, data were transcribed, coded, analyzed, and presented in narrative form. This was guided by the thematic data analysis process prescribed by Creswell & Creswell [84]. The steps of the thematic analysis are presented below:

1) Organizing data. It is during this phase where collected data from the interviews were transcribed, field notes were typed, and data were sorted and arranged depending on the sources of information.
2) Reading through all data. At this stage, the researchers reflected on the overall meaning of the gathered information from the participants' responses during the interview. Factors such as the words used, context, internal consistency, frequency or extensiveness, intensity, and specificity of the responses were considered. Key terms were also highlighted.
3) Coding. Here, the data were organized by creating a matrix with columns representing the categories which were derived from the interview questions, interview extracts, codes, descriptions, and themes. The matrix showed the data in a structured format for analysis. Phrases and important words representing a category were written in each row representing the code [85]. The coding process involved taking text data from the data collection, segmenting sentences or paragraphs into categories, and labeling categories. The coding process involved a combination of predetermined codes developed by the researchers and codes that emerged from the data gathered from the participants. This allowed for flexibility in capturing both anticipated and unexpected themes. Overall, the coding process involved systematically analyzing interview data, identifying meaningful categories or codes, and organizing them into a matrix for further analysis. The addition of descriptions provided the context and clarity to the coded data, facilitating the interpretation of findings and the development of overarching themes.
4) Generating descriptions and themes. In this specific instance, descriptions were added to the matrix generated in the previous step to provide additional context or explanations for each code or theme identified. This helped clarify the meaning and relevance of each code in the context of research. Based on the coded data, overarching themes were identified to summarize patterns or recurring topics across the interviews. The coding process was used to generate descriptions and themes. There were several themes generated but others with almost the same descriptions were merged. Finally, three themes emerged and appeared as the major findings gathered from the in-depth interviews.
5) Representing the description and themes. This phase was presented using the narrative passage to convey the findings of the analysis. Here, discussion with interconnecting themes was done and supported by quotations from the interviewees.

The first iteration lasted for a week.

Second Iteration. This was a student-led activity that began with an evaluation of the prototype podcast. The podcast prototype episode was played in the classroom of the current learners, allowing all present learners to provide suggestions for incorporation into the student-produced podcasts about research.

The current learners were grouped into 13 podcast teams, with groupings based on their research groups, each consisting of 4 to 6 members.

To prepare for the podcast recording, each group assigned roles to its members; including group leader/director, researcher, script writer, talents/hosts, and technical director. The instructional designer and subject matter expert presented a list of topics, from which the groups chose the topics they wanted to discuss and record in the podcast.

The second iteration was guided by the Version 2 of Tuscano's 5D's Framework for Purposeful and Meaningful Technology Integration in the Classroom [85].

All activities from Dip, Deepen, Discern, Do, and Distribute have integrated the use of technology which is essential in creating educational podcasts. The instructional designer and subject matter expert ensured that the current learners take active roles in searching, building, and creating knowledge about the research concepts.

During the Dip Stage, students engaged in prototype podcast listening sessions led by an instructional designer and subject matter expert. They utilized technological tools such as media players, speakers, laptops, and a shared *Google Drive* for collaboration and file sharing. Immediate feedback was provided in the classroom, with recommendations documented for future improvements.

In the Deepen Stage, learners transitioned into script writing, basing their work on distributed references about the selected topics. They used *Microsoft Word* for script writing. Files were uploaded to *Google Drive.* The course facilitation can edit and leave comments on the output in real-time via *Google Docs*. *Turnitin* was utilized for originality and plagiarism checks.

In the Do Stage, students actively participate in podcast recording sessions, enjoying the freedom to choose their recording locations. They utilized microphones, speakers, computers, and GarageBand software for recording and editing, documenting outside school recordings with photos. The course facilitator closely monitored recording sessions, offering immediate feedback on delivery and pronunciation, while also guiding learners on equipment usage and troubleshooting.

Finally, in the Distribute Stage, students transcribed the recorded podcasts for distribution alongside summaries or descriptions. The course facilitator created a podcast channel and uploaded all episodes to the platform *Spotify for Podcasters* (formerly *Anchor*). Feedback mechanisms were

established, including polls or Q&A sessions for each episode, enabling audience comments, answers, and suggestions.

The Discern Stage is integrated into each stage of the feedback process.

The second iteration lasted for three weeks.

Third Iteration. This process began with the evaluation of the podcast episodes. All current learners were encouraged to listen to the educational podcast episodes to gain a deeper understanding of the research concepts. The students' experiences in developing the podcast episodes, along with their feedback, served as input for the instructional designer and subject matter experts in designing the podcast channel.

Moreover, the developed podcast channel, *Researchcaster*, was evaluated by experts in evaluation, research, and instructional design using the WVSU Evaluation Form for Non-Printed Instructional Materials. To ensure inter-rater reliability, the researchers followed a qualification criterion for the evaluators (i.e., experts in research, evaluation and instructional design), used multiple evaluators (i.e., three evaluators), utilized a standard evaluation form, and kept detailed records of the evaluation process. The students also provided comments about the podcast channel.

The third iteration spanned a duration of four weeks.

Fig. 2 presents the illustration of the Iterative Process of the Evaluation, Design, and Development (IPEDD) of educational podcasts for Research in Broadcasting.

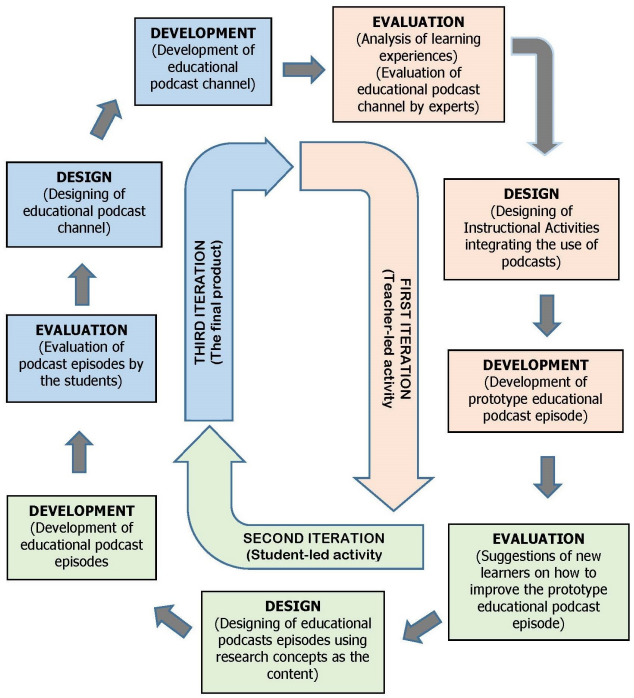

Fig. 2. The Iterative Process of the Evaluation, Design, and Development (IPEDD) of educational podcasts and its features for research in broadcasting.

D. Ethical Considerations

For this study, proper conduct and ethical considerations was followed according to the General Principles stated in the APA Code of Ethics (2017) [86].

Principle A: Beneficence and Nonmaleficence. The welfare and rights of the participants were safeguarded, ensuring no harm was done during the study. Discriminatory, offensive, and vulgar language was strictly avoided in both the formulation of the questionnaire and the conduct of interviews. Moreover, all gathered information was kept confidential and anonymous. Participation was entirely voluntary, with no coercion involved, and participants were informed of their right to withdraw from the study at any stage if they wished so.

Principle B: Fidelity and Responsibility. Relationships of trust were established with the participants by being transparent about the research purpose. Professional standards of conduct were upheld, roles and obligations were clarified, and appropriate responsibility for behavior was accepted.

Principle C: Integrity. All data collected aligned with the research's purpose, promoting accuracy, honesty, and truthfulness throughout the study. Coordination and communication, such as sending a request letter to the Dean of the College of Communication for approval, were properly documented.

Principle D: Justice. Fairness and justice were upheld, ensuring all individuals had access to and could benefit from the study's results. Precautions were taken to avoid potential biases, ensuring that the boundaries of competence and limitations of expertise did not lead to or condone unjust practices.

Principle E: Respect for People's Rights and Dignity. The dignity and worth of all participants were respected. Participants were properly informed about the study and their involvement, feeling obliged to join only on the basis of informed consent. The consent form included key details such as the study's title, researchers' contact information, purpose, procedures, risks and benefits, confidentiality, compensation, voluntary participation, and consent.

IV. Results and Discussion

A. Learning Experiences of Broadcasting Students in Research

To identify the learning experiences of the recent learners in BR 218 course, the thematic analysis process prescribed by Creswell & Creswell [84] was used.

There were three themes which emerged from the in-depth interviews of the four recent learners. These are: Broadcasting Student's Research Journey, Group Research Dynamics, and Complex Research Concepts.

Broadcasting Students' Research Journey. Each learner faces unique conditions that influence their learning experiences, including background, financial situation, health, family circumstances, learning style, and prior knowledge. The recent interviewees in the BR 218 course had diverse life circumstances that affected their experiences in Research in Broadcasting, Interactive, and Emerging Media.

A lack of resources was a common challenge. While handouts were provided through the learning management system, they were insufficient for grasping basic communication research concepts. Limited access to online materials and restrictions on library visits further compounded difficulties in conducting comprehensive literature reviews. Participant A struggled to access local studies and could not frequently visit the school for research.

Participant B faced challenges accessing additional resources from school libraries, as they relied primarily on digital platforms for supplementary materials.

Internet connectivity was a significant factor. During the pandemic, many students depended on online resources, making connectivity a major issue. While three out of four interviewees reported good internet access at home, Participant a experienced slow connectivity and studied late at night, while Participant D used a school-provided tablet with mobile data to download materials.

Supportive family members helped the interviewees access learning tools like laptops, printers, and cellphones. Although Participant D did not own a laptop, she managed to use a tablet provided by the university and preferred staying at her aunt's house to improve connectivity.

Parental support positively influenced their learning experiences, in contrast with the remote learning challenges of other Filipino students' during the pandemic [23, 24]. This demonstrates that the effectiveness of learning at home depends on various factors, including resource access and parental assistance.

The interviewees employed different learning styles to adapt to remote learning. Participant B printed notes from the Learning Management System and handwritten important details. Participant C preferred hard copies over audio materials due to her visual learning style.

The pandemic exacerbated difficulties in learning Research in Broadcasting, Interactive, and Emerging Media. Although there had been prior research training in Senior High School, it was insufficient for BR 218. Many interviewees reported a weak foundation in research, attributing it to inadequate high school preparation and ineffective teaching methods. These revelations were consistent with the findings from previous studies [38, 43].

Group Research Dynamics. During the second semester of academic year 2021–2022, students in BR 218 faced challenges on group work due to remote learning. Problems included inactive members with poor internet or conflicting work schedules, causing delays and disputes. Participant D expressed frustration with some members' lack of contribution and responsiveness, noting that some were active on social media but not in group chats.

Time management was problematic, as remote learning removed the need for physical classroom presence. This flexibility made coordinating schedules and managing time difficult, exacerbating misunderstandings as affirmed by Subia *et al.* [40]. Participant B stepped down as leader due to inexperience and inconsistent contributions from a group member required multiple revisions.

Despite these challenges, the interviewees found value in group work. They utilized tools like *Google Meet*, *Google Docs*, and *Discord* for collaboration. They appreciated brainstorming and problem-solving activities, which enhanced teamwork skills. Participant A valued his groupmates' dedication, while Participant B found that working with others improved her soft skills.

Collaborative learning is crucial for project-based courses like BR 218. It helps in promoting teamwork, leadership, and communication, a point supported by Tan [46]. Group work challenges and solutions affirm the importance of effective group dynamics and collaboration.

Complex Research Concepts. Learning complex concepts remotely posed significant challenges. Students struggled in composing the section Review of Related Literature (RRL), finding it difficult to search and organize literature due to insufficient high school preparation. Participant B, initially underestimating the difficulty, found the RRL challenging due to its specific formatting requirements.

Participant D suggested more in-depth discussions on the RRL and access to reputable academic databases. Participant A found literature review meticulous, requiring extensive reading to find relevant studies. This difficulty aligns with the findings of Shahsavar and Kourepaz [44], which indicate that even advanced students find literature reviews challenging.

The interviewees also faced challenges in selecting the right research method and writing research proposals. Many were unfamiliar with different methods and struggled with research questions. Participant C desired more instruction on research methodologies and suggested additional sessions for interpreting results. Participant B recommended consultations for research design and problem selection.

Despite a weak research experience, Participant C's dedication and extra effort helped her overcome challenges. Participant B highlighted the importance of choosing relevant and feasible research problems. Participant A felt that one semester was insufficient to cover research concepts thoroughly.

The challenges faced by students, including those in academic writing, proposal structuring, and research problem selection, are consistent with issues found in other studies [38, 39]. Participants struggled with academic writing because of its structured nature, as opposed to more creative writing styles.

In summary, broadcasting students faced various challenges in their research journey, including resource limitations, remote learning adaptation, and group work issues. Despite these obstacles, collaborative experiences and support systems provided pathways for overcoming difficulties and promoting academic growth.

B. The Developed Educational Podcast and its Features for Research in Broadcasting

The educational podcasts for the course Research in Broadcasting, Interactive, and Emerging Media (BR 218) were developed in response to student interviews. The interviews highlighted themes such as the research journey, group dynamics, and difficulties with complex research concepts. The podcast production addresses these challenges by providing flexible, audio-based access to educational content, serving as valuable supplementary material. The series includes episodes that tackle key research concepts and provide students with the chance to work together as a team on the podcast's development and production. The project was completed in three stages: creating a prototype, producing the episodes, and setting up the podcast channel.

The Prototype Podcast Episode. The initial stage began with an analysis of learners' experiences, the design of instructional activities, and the development of a prototype podcast episode. The aim was to address the challenges of

remote learning by leveraging the auditory nature of podcasts, which allows for flexible engagement and mitigates issues related to internet connectivity and time constraints. Additionally, podcasts provide a platform for collaborative discussions, helping learners share insights and maintain group cohesion.

The instructional designer created an activity that served as a template for students to produce their own podcasts. This approach not only introduced an innovative pedagogical method but also provided a structured framework to promote student autonomy and creativity.

Topics for podcasting were chosen based on the research concepts that learners have identified as challenging. These challenging concepts were broken down into 15 episodes which were presented in Table 1.

Table 1. Complex research concepts and corresponding podcast episodes

Complex Research Concepts	Episode No.	Podcast Episodes
writing an outline for research introduction	1	drafting a thesis proposal outline
	2	writing a research introduction
choosing a research method	3	survey method
	4	case study method
	5	content analysis
	6	production & evaluation
searching and organizing the review of related literature	7	searching, reading, and evaluating sources
	8	asking for information
	9	doing a literature review
	10	organizing and outlining RRL
writing the review of related literature	11	writing RRL with clarity
	12	mistakes to avoid in writing the literature review
writing the research proposal	13	citations and references
	14	common mistakes to avoid in writing a research proposal
	15	working as a group in writing the research proposal

Among these concepts, the instructional designer selected one episode focused on research design in production and evaluation to develop into a prototype. The script, written in an interview format, was recorded using microphones, a computer, and *GarageBand*. The final prototype, lasting 7 minutes and 40 seconds, featured a conversation between the instructional designer and a student-researcher, discussing research experiences and providing tips for production and evaluation studies. The episode emphasized the importance of good equipment, financial preparedness, active participation, and recognizing the unique features of production research.

The prototype was shared with current students to serve as a reference for their podcast creation. The instructional designer aimed to provide a practical example and guide, helping students understand the desired format, content, and approach for their own episodes. Feedback was collected to refine future podcasts, with students suggesting the inclusion of a standard intro for consistency, professionalism, and audience engagement. The podcast channel was named "*Researchcaster*: Broadcasting Communication Research On-Air," aligning with the course's focus and resonating with students for its clarity and relevance.

The use of prototypes in the development of educational materials is supported by recent studies [76, 80]. Prototypes facilitate iterative improvements and problem-solving while incorporating crucial feedback, ensuring that the final product meets learning objectives and engages learners effectively. Integrating prototypes in the design process enhances instructional content and improves the overall learning experience.

The educational podcast and its features were developed as supplementary material for Research in Broadcasting, Interactive, and Emerging Media course (BR 218) for third-year students in the Bachelor of Arts in Broadcasting program. This educational podcast is based on the learning experiences of recent learners who undertook this course using asynchronous learning during the pandemic. Their challenges and achievements have played a pivotal role in shaping the development of these educational podcasts progressing through three iterations: crafting the podcast prototype, producing podcast episodes, and establishing the podcast channel.

The Podcast Episodes. The second iteration in the development of educational podcasts involved designing and developing podcast episodes. After gathering feedback from recent learners about their experiences in research and comments from current learners regarding the prototype podcast, the instructional designer created an activity framework to guide students in developing their own podcast episodes.

Group dynamics were encouraged by letting students work on the podcast episodes collaboratively. The need for collaborative podcast creation, which empowers students with active involvement, fostering motivation, ownership, and the development of crucial communication and critical thinking skills, is emphasized by various scholars, [8, 63, 64, 66].

In addition, the interview analysis on group work in the remote learning context of BR 218 course highlights both negative and positive aspects. Despite issues such as inactive members and time management difficulties, recent learners found working as a group beneficial. Positive aspects include collaborative brainstorming, strengthened relationships, improved teamwork and sensitivity, skill development (such as time management and discipline), and the potential for producing high-quality research outputs when the right group members are chosen.

The positive impact of group work prompted the instructional designer to create collaborative podcast development activities. Students were given the autonomy to choose their research group members based on preferences, aiming to maximize the benefits of collaboration in the learning process. Since this second iteration was a student-led activity, the instructional designer took the singular role of the facilitator by providing topics and references and letting the students write the script following the template in the prototype podcast.

Guided by Tuscano's Version 2 of the 5D's Framework for Purposeful and Meaningful Technology Integration in the Classroom [84], all activities encompassing Dip, Deepen, Discern, Do, and Distribute stages have seamlessly integrated

technology in the creation of educational podcasts. The instructional designer and subject matter expert ensured that current learners actively engage in searching, constructing, and synthesizing knowledge pertaining to research concepts.

Students were provided with the scriptwriting guidelines, tasking them to create a script ranging from 700 to 1000 words. The script included a title, a podcast description of 100–150 words, as well as introductory and concluding spiels. Likewise, they were encouraged to seek additional resources to reinforce the depth of the discussion.

Additionally, students' scripts were subjected to plagiarism checking using the *Turnitin* software provided by the university. The first drafts of the scripts were all uploaded in the *Google Drive* for the course facilitator to check.

During the podcast recording, learners chose the locations, but majority preferred to record the podcast in school because of the availability of the equipment and the recording software. The course facilitator, who also served as the instructional designer, played a pivotal role during the recording sessions. Her close supervision allowed for real-time feedback, offering valuable insights to enhance the quality of the recordings. This immediate feedback mechanism not only facilitated a dynamic learning environment but also ensured that students could make necessary adjustments promptly.

Every podcast episode underwent improvement through the editing process, which included removing irrelevant segments, correcting mispronunciations, and incorporating a standard introduction with background music.

To enhance efficiency and accessibility, all recorded podcast episodes, along with the final transcripts, were systematically uploaded on the *Google Drive*. This centralized platform served as a repository for the collective efforts, fostering easy sharing, reviewing, and interactive engagement among students and facilitator throughout the podcasting project.

During the recording of the podcast episodes, it was observed that several broadcasting students possessed natural skills as engaging and dynamic hosts, showcasing potential talent for future broadcasting. This discovery not only highlighted the diverse skill sets within the group but also suggested avenues for further nurturing and exploration of these talents in podcasting and broadcasting.

Furthermore, as students engaged in podcast recording, the facilitators noted both the enjoyment expressed by the students and the remarkable improvement in comprehension. A student specifically mentioned that script writing helped her grasp research concepts better, highlighting how creative activities can enhance academic learning. This diverse engagement not only contributed to the project's success but also enhanced the overall educational experience of the student broadcasters.

The involvement of students in script writing, editing, and recording processes not only fosters a sense of ownership and motivation but also nurtures essential skills in communication, creativity, and critical thinking. The findings of these studies underscore the positive impact on language skills, cognitive processes, and teamwork. The collaborative nature of podcasting, as highlighted by Makina's framework [67], contributes to a holistic and meaningful learning experience. Thus, the compelling evidence suggests that involving groups of students in podcast creation serves as a pedagogically sound strategy, enhancing both engagement and the acquisition of valuable skills.

Podcast Platform and Channel. The third iteration of the development of educational podcasts involved the design and development of a podcasting platform and podcast channel.

The instructional designer made a strategic choice by selecting *Spotify for Podcasters*, formerly known as *Anchor*, as the dedicated podcasting platform to host the podcast channel. This decision was influenced by a study conducted by Perez [48]. In this study, educators in Cagayan leveraged the capabilities of a free podcast creation application to deliver instructional materials in the context of an asynchronous learning modality. The success and positive outcomes reported in Perez's study underscored the effectiveness of utilizing *Spotify for Podcasters* as a powerful tool for educational content delivery.

The instructional designer chose *Spotify for Podcasters* as the platform on account of its comprehensive offerings that extend beyond simple hosting. This platform provides a variety of tools to manage, analyze, and enhance podcast content, making it particularly valuable for educational purposes. With a user-friendly interface and detailed analytics, *Spotify for Podcasters* is ideal for enriching educational content through podcasts.

To set up the podcast channel, the instructional designer first signed up for a *Spotify* account, which can be accessed across various devices. After setting up the account, essential elements like the podcast name, description, cover art, and the first episode were prepared, enabling the publication and distribution of content effectively. By leveraging the platform's features, the instructional designer engages learners more effectively, using podcasts as a powerful educational tool.

From the creator's perspective, *Spotify for Podcasters* offers several essential parts and features to manage, analyze, and promote podcasts effectively. The instructional designer focused on maximizing specific features on *Spotify for Podcasters* to enrich educational content and effectively engage learners, particularly utilizing podcasts as a valuable tool for teaching and learning research within the course.

Home. The Home page serves as the central hub for podcast creators on *Spotify*. This is the main page where the podcast channel name, cover art, podcast overview, important news and updates, and access to key functions can be found. The home page also monitors the overall podcast performance such as the number of plays, audience size, and *Spotify* followers.

In the Home page, the access key to the profile page can also be found. When clicked, this leads to the educational podcast's profile page visible to end-users or the listeners. On this page, end-users can access the Podcast Channel name, description, and podcast episodes. This page can be accessed using this link *https://podcasters.spotify.com/pod/show/shiela-mae20*.

Analytics. The Analytics page on *Spotify for Podcasters* provides creators with important information to enhance the podcasts. In this page, creators can view important information such as the overall podcast performance, audience demographics, and the effectiveness of individual

episodes.

The analytics are like a report card for the podcast for it guides the creators in improving content and promotions.

Episodes. The episode page on *Spotify for Podcasters* provides a comprehensive view of all the podcast episodes. It includes essential details like titles, the number of plays, published dates, and durations. The episodes are listed in reverse chronologicalorder, making it easy for both creators and listeners to navigate through the podcast's content history. One noteworthy feature is the ability to schedule episode releases. This functionality empowers creators to plan and organize their content distribution well in advance. It can be a valuable tool for podcasters, helping them maintain a consistent and well-timed release schedule for their audience.

Interact. The Interact page of *Spotify for Podcasters* provides powerful tools for both beginners and seasoned podcasters to engage with their audience and grow their podcast. Using fan engagement tools such as Q&A and polls, people on *Spotify* can interact directly with their episodes. A default question, "What did you think of this episode?" is added to jumpstart the conversation and make it easier to collect listener's feedback. Nonetheless, podcasters can customize the default question or turn off this setting and use the polls instead.

In this educational podcast, the instructional designer decided to add the interact features for each episode as a kind of formative assessment. This is to encourage active participation from the students and to find out whether they have understood the concepts presented in the podcast. However, there is a limitation in this feature because the students need to use their mobile device and upgrade to the new *Spotify* application for them to be able to access the interactive features.

Monetize. Podcasters can generate revenue from their content, and podcast monetization is a common practice. *Spotify* offers various monetization programs for podcasters, such as the *Spotify Ad Studio* and the *Spotify Audience Network*. These programs enable creators to earn revenue by incorporating ads into their podcast episodes. Currently, monetization features are not yet available in the region where the instructional designer resides. However, it is possible that, in the future, monetization options may become available, potentially opening up opportunities, especially for educational podcasts seeking ways to generate income from their valuable content.

Indeed, *Spotify for Podcasters* offers the capability to automatically create a channel, streamlining the process of publishing and distributing podcast content.

The features offered by *Spotify for Podcasters* have played a crucial role in elevating the *Researchcaster Spotify* channel.

The platform's podcasting tools have facilitated efficient organization, simplifying content management and presentation in a way that engages the audience through a designated channel that can be accessed by any device, including mobile phones and computers desktops. In addition, features such as episode scheduling, analytics, and promotional tools ensure that the content is not just well-structured but also effectively reaches the intended audience.

Moving onto the *Spotify* channel which is the *Researchcaster*, the mobile accessibility added a layer of convenience for end-users especially to the students. This mobility enables students to access the channel from anywhere, enhancing the overall reach and accessibility of the content. This is the link to the *Spotify* Channel of the educational podcast *https://spotify.link/hXNzf3OgYDb.*

Fig. 3 presents the Researchcaster's Spotify channel interface as displayed on a mobile device.

The interactive features such as the Q & A and polls available on each podcast episode contributed to a more engaging experience for users, fostering a sense of connection and participation.

On the mobile platform, *Spotify* offers auto-generated transcripts for podcasts, allowing users to read while listening. This feature enhances accessibility, catering to users who prefer or need written content.

Fig. 3. The *Researchcaster Spotify* channel.

While the *Spotify* application automatically generates transcripts, the instructional designer has t aken an extra step by incorporating a direct link to the complete transcripts, conveniently stored in *Google Drive*. This enhancement guarantees that students can effortlessly reach the entire written content through a direct link to the full transcripts, significantly improving their accessibility and engagement. Moreover, recognizing the importance of accommodating diverse learning preferences, the inclusion of transcripts serves as a valuable resource, particularly for visual learners.

By providing access to written content alongside audio, the educational podcast ensures that visual learners can fully engage with the material, reinforcing comprehension and retention.

C. The Acceptability of the Developed Educational Podcast

This part evaluates how well an educational podcast is accepted by the instructional design experts in terms of content, instructional quality, technical quality, presentation and organization, accuracy and up-to-datedness of information. To assess the acceptability of the educational podcast and its features according to the experts' evaluations, the mean and standard deviation were used.

Furthermore, the insights derived from open-ended questions posed to current students of Research for Broadcasting, Interactive, and Emerging Media were incorporated to complement the numerical findings.

Table 2. The overall evaluation of the level of acceptability of the educational podcast

Category	*SD*	*M*	Description
1. Content	0.20	3.81	Very Acceptable
2. Instructional Quality	0.10	3.78	Very Acceptable
3. Overall Technical Quality	0.17	3.77	Very Acceptable
4. Presentation and Organization	0.10	3.94	Very Acceptable
5. Accuracy and Up-To-Datedness of Information	0.10	3.94	Very Acceptable
Overall Rating	0.09	3.85	Very Acceptable

Note. $n = 6$. Interpretation is based on the following scale/criteria: 1.00–1.50 = Barely Acceptable, 1.51–2.50 = Moderately Acceptable, 2.51–3.50 = Acceptable, 3.51–4.00 = Very acceptable.

Table 2 reveals that, collectively, the experts evaluated the acceptability of the educational podcast as *very acceptable* (*M = 3.85, SD = 0.09*).

The assessment results indicate that the educational podcast performed well across various categories, including content, instructional quality, technical quality, presentation, organization, accuracy, and up-to-datedness of information, with an overall rating of *very acceptable* (M = 3.85). The low standard deviations in each category demonstrate a high level of agreement among evaluators, reinforcing the reliability of the results. The findings align with previous research on podcasts in teaching and research [35, 36].

The podcast's content received high praise for its depth, clarity, and engaging presentation (M = 3.81). However, suggestions for improvement include reducing episode length and introducing varied formats to maintain listener engagement, which aligns with frameworks that stress tailoring content to learners' needs [67, 68].

Instructional quality was rated as *very acceptable*, (M = 3.78), reflecting the podcast's success in stimulating creativity and aligning with learners' levels. Despite this positive assessment, there is a notable need for improvement in feedback implementation. Research underscores that effective feedback is crucial for enhancing student engagement and ensuring that educational content meets learners' needs [56, 68].

The overall technical quality was rated *very acceptable* (M = 3.77), indicating strong audio and production. However, there is a need for better interactive elements and feedback mechanisms, reflecting past research on the importance of interaction for enhancing learning [36, 46, 48].

The podcast's presentation and organization were rated *very acceptable* (M = 3.94), with its clear structure and engaging delivery benefiting from student involvement in scriptwriting. This supports research showing that student-produced content can improve learning and language skills [8].

The accuracy and up-to-datedness of the podcast's information were also rated *very acceptable* (M = 3.94), ensuring the content is relevant and current. This finding is consistent with research emphasizing the importance of regular updates for maintaining content reliability [46].

The use of podcast segments to teach research skills aligns with the positive evaluations seen in content, instructional quality, technical quality, and presentation, as well as Krulder's case [35] demonstrating the benefits of student involvement in podcast creation. Additionally, the recognition of podcasts' innovative nature supports studies highlighting their role in enhancing understanding and independent learning [54, 55].

This study offers valuable insights into the use of podcasts in educational settings; however, several limitations must be noted such as: small sample size may limit the generalizability of the findings to a larger population, the reliance on self-reported data introduces potential bias, as participants might want to present themselves positively or may forget specific details, and factors such as cultural influences, timing, and social support could have impacted the results.

Recommendations to improve the podcast include incorporating background music to avoid monotony, diversifying formats with interviews or case studies, and adjusting episode lengths to increase accessibility. Implementing these suggestions could further elevate the podcast's quality for educational purposes.

The findings of this study on the educational podcast Researchcaster are consistent with existing literature on instructional materials, particularly the studies by Bacio and Sagge [87, 88], which underscore the necessity for instructional materials to align with specific educational goals, content standards, and the needs of target users. Similarly, Sagge and Segura [89] assert that instructional resources are most effective when their learning objectives, stylistic elements, and presentations are meticulously crafted to suit the intended audience. This study affirms that Researchcaster adheres to these standards, as evidenced by its high ratings for acceptability across multiple evaluative categories. These results parallel the conclusions drawn by Embajador [90], who highlights the critical role of systematic evaluation in enhancing instructional materials to support optimal student learning outcomes.

The results correspond with the studies conducted by several authors, which emphasize the efficacy of technology, including video lessons, in engaging students who may be absent from in-person classes and in catering to various learning styles [91]. Nabayra [92] underscores that technology-enhanced instructional tools, like as videos and other learning media, are invaluable resources in the school system affected by the epidemic, improving learning outcomes by addressing diverse needs and optimizing instructional delivery.

Similarly, the podcasting approach offers flexible access to educational content in audio format, which can be tailored to meet individual student needs and preferences. The research findings on the use of podcasts have broader applications across various fields of study, such as education, healthcare, and business. By enhancing engagement and accessibility, podcasts can serve as effective learning tools in disciplines like history, science, and professional development, allowing for the dissemination of knowledge in an interactive and flexible format. This versatility not only fosters deeper understanding but also encourages lifelong learning across diverse audiences.

V. Conclusions

The analysis of recent learners' experiences in the BR 218 course sheds light on the complexities of research education especially in tertiary level. Their experiences emphasize the need for flexible learning approaches, use of technology as an additional resource, and the development of key research skills in changing academic settings. This emphasizes the importance of creating a supportive and adaptable learning environment to enhance research learning experiences.

The iterative process in developing the educational podcast as supplementary material for the BR 218 course demonstrates the importance of continuously improving both its content and delivery to maximize its efficacy in promoting learning. Through the adoption of innovative approaches and utilization of available platforms, the podcast has the potential to serve as a valuable resource for enriching research learning experiences not only within the BR 218 course but also across other relevant academic disciplines.

The observed usefulness of the podcasts in education have several implications: Educational podcasts in broadcasting courses offer several key benefits: (1) flexibility—students can learn at their own pace, which helps with complex topics; (2) real-world insights—interviews with industry experts bridge theory and practice, fostering creativity and critical thinking; (3) active engagement—podcasts encourage discussions and projects that deepen understanding; (4) collaboration—creating podcasts helps students develop teamwork and communication skills; and (5) relevance: incorporating podcasts aligns with digital trends, making learning more engaging. In general, this research highlights the capability of podcasts to enhance the broadcasting education experience. Moreover, the acceptance of the podcast highlights its value not only in the BR 218 course but also in broader educational contexts. Its adaptability and strong pedagogical foundation make it useful for improving learning outcomes. Its ability to deliver quality content and engage learners highlights its pivotal role in advancing academic excellence and fostering innovation.

Furthermore, students play a pivotal role in embracing these tools to enhance their learning experience, while educators, curriculum designers, and administrators must work collaboratively to incorporate podcasts into curricula effectively. By doing so, they can enrich the learning process, foster critical thinking, and promote deeper engagement with the subject matter. Also, the Commission on Higher Education (CHED) and content creators are urged to support and refine podcast initiatives, ensuring they are aligned with educational goals and adequately funded.

While this study provides insights into the use of podcasts in educational setting, several limitations should be acknowledged. First, the sample size was relatively small which may mean the results don't apply to a larger group. The study also used self-reported data, which may be biased due to things like people wanting to present themselves in a good light or by forgetting details. Finally, some external factors, such as cultural influences, temporal factors, social support, may have affected the results. Future research that addresses these issues could help provide a clearer understanding of the topic.

Future researchers are encouraged to continue exploring and expanding on this study to deepen understanding of the potential of educational podcasts. These collective efforts will not only advance educational practices but also prepare students for success in a rapidly evolving digital landscape.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Quero was in charge of planning the investigation, carrying out the analysis, and writing the report. Bacio reviewed the paper, edited the article, finalized the paper format, and offered advice and suggestions to enhance the study. The final draft has been authorized by both authors.

References

[1] A. D. Almoite and L. B. Pacursa, "Flexible learning engagements: Exploring the lived experiences of the learners in the new normal," *Open Access Library Journal*, vol. 9, p. e8519, 2022. doi 10.4236/oalib.1108519

[2] T. Corlatean, "Risks, discrimination and opportunities for education during the times of COVID-19 pandemic," in *Proc. the 17th Research Association for Interdisciplinary Studies*, 2020, pp. 37–46. doi: 10.5281/zenodo.390986

[3] W. Strielkowski, "COVID-19 pandemic and the digital revolution in academia and higher education," *Preprints*, vol. 1, pp. 1–6, 2020. doi: 10.20944/preprints202004.0290.v1

[4] *Guidelines on the Implementation of Flexible Learning*, CHED Memorandum Order No. 4 Series of 2020, 2020.

[5] *Sustaining Flexible Learning in Higher Education: An Addendum to CMO No. 4 Series of 2020*, CHED Memorandum Order No. 6 Series of 2022, 2020.

[6] J. P. Ranara. (Oct. 2022). PH podcast audience grows—here are some tips from Pinoy podcasters. *Philippine Star Life.* [Online]. Available: https://philstarlife.com/geeky/932506-spotify-podcasting-tips-famous-filipino-podcasters

[7] I. Espada, R. Alingasa, and S. M. Quero, "Employability of West Visayas State University communication graduates Philippines," *Jurnal Studi Jurnalistik*, vol. 5, no. 1, pp. 32–40, 2023. doi: 10.15408/jsj.v5i1.31618

[8] B. Phillips, "Student-produced podcasts in language learning—exploring perceptions of podcast activities," *International Academic Forum Journal of Education*, vol. 5, no. 3, 2017.

[9] *Policies, Standards and Guidelines (PSGs) for Bachelor of Arts in Broadcasting Program*, CHED Memorandum Order No. 37 Series of 2017, 2017.

[10] S. Papert and I. Harel, "Situating constructionism," *Constructionism*, Norwood, NJ: Ablex Publishing, 1991, pp. 1–11.

[11] E. Ackermann. (2001). Piaget's constructivism, Papert's constructionism: What's the difference? [Online]. Available: http://learning.media.mit.edu/content/publications/EA.Piaget%20_%20Papert.pdf

[12] R. Mayer, "Cognitive theory of multimedia learning," *The Cambridge Handbook of Multimedia Learning*, Cambridge, UK: Cambridge

University Press, 2014. doi: https://doi.org/10.1017/CBO9781139547369
[13] T. K. A. Vo, "Evaluation models in educational program: Strengths and weaknesses," *VNU Journal of Foreign Studies*, 2018. doi: 10.25073/2525-2445/vnufs.4252
[14] D. L. Stufflebeam, "Daniel Stufflebeam's CIPP model for evaluation —An improvement and accountability-oriented approach," in *Research Methods for Social Sciences: Evaluation Theory, Models and Applications*, D. L. Stufflebeam, L. S. Coryn, and Chris, Eds., Somerset, NJ: Jossay-Bass, 2014, pp. 310–339.
[15] J. Y. Tzeng and S. C. Cheng, "The effectiveness of educational podcasts in enhancing student learning outcomes: A meta-analysis," *Educational Technology Research and Development*, vol. 68, no. 4, pp. 2121–2140, 2020.
[16] G. J. Hwang and T. H. Chang, "The role of podcasts in higher education: Perspectives from students and instructors," *Journal of Computing in Higher Education*, vol. 34, no. 2, pp. 327–348, 2022.
[17] O. McGarr, "Podcasting as a tool for student engagement: A case study in higher education," *International Journal of Educational Technology in Higher Education*, vol. 18, no. 1, pp. 3–15, 2020.
[18] K. Dorr and R. Timmerman, "Educational podcasts: Engagement and learning in higher education," *Journal of Digital Learning in Teacher Education*, vol. 35, no. 1, pp. 45–58, 2019.
[19] J. R. Young and A. D. Silva, "Podcasts as learning resources: Exploring their impact on student engagement in various disciplines," *Innovations in Education and Teaching International*, vol. 60, no. 3, pp. 225–238, 2023.
[20] M. Kane. (2023). Mind the gap: Can podcasts help bridge the divide between education research and classroom practice? *Neag School of Education*. [Online]. Available: https://education.uconn.edu/neag-journal/spring-2023/mind-the-gap/
[21] J. Howarth. (2024). 12 top podcasting industry trends in 2024. *Exploding Topics*. [Online]. Available: https://explodingtopics.com/blog/podcasting-trends
[22] J. J. Diez, E. M. Ebro, R. J. Dequito, and T. J. A. Diquito, "Uncovering learners' experiences to new normal education: Implications of asynchronous instruction in GE 5: Science, technology, and society course teaching," *European Journal of Education Studies*, vol. 8, no. 10, 2021. doi: 10.46827/ejes.v8i10.3937
[23] F. Dayagbil, D. Palompon, L. Garcia, and M. Olvido, "Teaching and learning continuity amid and beyond the pandemic," *Frontiers in Education*, vol. 6, 2021. doi: 10.3389/feduc.2021.678692
[24] J. S. Barrot, I. I. Llenares, and L. S. D. Rosario, "Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines," *Education and Information Technologies*, vol. 26, pp. 7321–7338, 2021. doi: 10.1007/s10639-021-10589-x
[25] F. Hernández-Hernández and J. Sancho-Gil, "Students' experiences in suddenly transformed living and educational environments by COVID-19," *Frontiers in Psychology*, vol. 12, 2021. doi: 10.3389/fpsyg.2021.782433
[26] B. Alatni, I. Abubakar, and S. Iqbal, "COVID-19 and rapid course adaptations in Saudi Arabia: An experiential learning and recommendations for online education," *Frontiers in Psychology*, vol. 12, 2021. doi: 10.3389/fpsyg.2021.643203
[27] T. Nguyen, C. L. M. Netto, J. Wilkins *et al.*, "Insights into students' experiences and perceptions of remote learning methods: From the COVID-19 pandemic to best practice for the future," *Frontiers in Education*, vol. 6, 2021. doi: 10.3389/feduc.2021.647986
[28] O. S. I. Fayomi, I. P. Okokpujie, and M. Udon, "The role of research in attaining sustainable development goals," in *Proc. IOP Conference Series: Materials Science and Engineering*, vol. 413, 2018. doi: 10.1088/1757-899X/413/1/012002
[29] A. K. H. Alghamdi and P. Deraney, "Teaching research skills to undergraduate students using an active learning approach: A proposed model for preparatory-year students in Saudi Arabia," *International Journal of Teaching and Learning in Higher Education*, vol. 3, no. 2, 2018. http://www.isetl.org/ijtlhe/
[30] A. Hosein and N. Rao, "Students' reflective essays as insights into student-centred pedagogies within the undergraduate research methods curriculum," *Teaching in Higher Education*, vol. 22, no. 1, pp. 109–125, 2017. doi: 10.1080/13562517.2016.1221804
[31] V. Burns and S. Wiggins, "Development of problem-based learning materials for teaching qualitative research methods to undergraduate students," *SAGE Journals*, vol. 8, no. 1, 2009. https://journals.sagepub.com/doi/abs/10.2304/plat.2009.8.1.29
[32] S. Liu and R. Breit, "Empowering and engaging students in learning research methods," *Education Research and Perspectives: An International Journal*, vol. 40, no, 1, p. 150, 2013.
[33] R. Arceño, "Development of instructional materials in a template approach," *International Journal of Science and Management Studies*, vol. 2, no. 2, 2019.
[34] N. Krueger. (2017). How podcasts are making students better researchers. *International Society for Technology in Education*. [Online]. Available: https://www.iste.org/explore/Digital-and-media-literacy/How-podcasts-are-making-students-better-researchers
[35] J. Krulder. (2019). Teaching the research process through podcasting. *Edutopia*. [Online]. Available: https://www.edutopia.org/article/teaching-research-process-through-podcasting/
[36] C. DeMarco, "Hear here! The case of podcasting in research," *Society of Research Administrators International*, vol. 53, no. 1, 2022. https://www.srainternational.org/blogs/srai-jra1/2022/01/27/hear-here-the-case-for-podcasting-in-research.
[37] Z. A. Rind, M. A. Laghari, and M. A. Jamali, "Attitude of students towards research: A review," *International Journal of Multidisciplinary Research and Development*, vol. 7, no. 5, 2020.
[38] G. Garancho and E. Marpa, "Teacher education students' attitude towards research studies: A case study," *Rangsit Journal of Educational Studies*, vol. 6, no. 1, 2021. https://rsujournals.rsu.ac.th/index.php/RJES/article/view/2205
[39] F. Oguan Jr., M. Bernal, and M. Pinca, "Attitude and anxiety towards research, its influence on the students' achievement in the course," *Asian Journal of Management Sciences & Education*, vol. 3, no. 4, 2014.
[40] G. S. Subia, C. O. Gaston, J. F. A. Gaspar, D. A. S. Padilla, and M. D. A. Valenzuela, "Thesis writing amidst the COVID-19 pandemic: The case of hospitality and tourism management students of Wesleyan University Philippines," *Open Journal of Social Sciences*, vol. 10, pp. 191–198, 2022. doi: 10.4236/jss.2022.102013
[41] J. Quinto, "Seize the day or seize theses? The challenges in undergraduate thesis writing," *Issues in Educational Research*, vol. 32, no. 4, pp. 1567-1583, 2022. http://www.iier.org.au/iier32/quinto.pdf
[42] Z. Maqsood, S. H. Jabeen, N. R. Chaudhry, and I. Sardar, "Attitude towards research of university students, a multivariate analysis," *Pyrex Journal of Educational Research and Reviews*, vol. 4, no. 3, 2019.
[43] E. Tan, "Research experiences of undergraduate students at a comprehensive university," *International Journal of Teaching and Learning in Higher Education*, vol. 19, no. 3, 2007.
[44] Z. Shahsavar and H. Kourepaz, "Postgraduate students' difficulties in writing their theses literature review," *Cogent Education*, vol. 7, no. 1, 2020. doi: 10.1080/2331186X.2020.1784620
[45] K. Meinzer, *So You Want to Start a Podcast*, HarperCollins Publishers, 2019.
[46] C. Hewitt. (Jan. 2023). How to produce a podcast: the ultimate guide. [Online]. Available: https://castos.com/podcast-production/
[47] C. Gray. (2016). How to start a podcast: Your lightning fast, no-sweat guide, from launch to your 1st to 100 listeners. [Online]. Available: https://www.thepodcasthost.com/planning/how-to-start-a-podcast/
[48] M. Mobbs, G. Salmon, and P. Edirisingha, "How to create podcasts—practitioner's guide," in *How to Create Podcasts for Education*, G. Salmon *et al.*, Eds., Open University Press, 2008.
[49] L. Maxwell, *Podcasting with Youth: A Quick Guide for Librarians and Educators*, Libraries Unlimited, 2020.
[50] H. Khechine, S. Lakhal, and D. Pascot, "University students' perception of the pedagogical use of podcasts: A case study of an online information system course," *Journal of Education and Training Studies*, vol. 1, no. 2, pp. 136–151, 2013. doi: 10.11114/jets.v1i2.139
[51] A. Chan and M. J. W. Lee, "An MP3 a day keeps the worries away: Exploring the use of podcasting to address preconceptions and alleviate pre-class anxiety amongst undergraduate information technology students," in *Proc. the Student Experience Conference on Good Practice in Practice*, NSW: Charles Sturt University, 2005.
[52] M. Huntsberger and A. Stavitsky, "The new 'podagogy': Incorporating podcasting into journalism education," *Journalism & Mass Communication Educator*, vol. 61, no. 4, pp. 397–410, 2006. doi: 10.1177/107769580606100405
[53] M. Nie, A. Armellini, S. Harrington, K. Barklamb, and R. Randall, "The role of podcasting in effective curriculum renewal," *ALT—Research in Learning Technology*, vol. 18, no. 2, 2010.
[54] L. Taylor and S. Clark, "Educational design of short, audio-only podcasts: The teacher and student experience," *Australasian Journal of Educational Technology*, vol. 26, no. 3, pp. 386–399, 2010.
[55] P. Edirisingha, D. Hawkridge, and J. Fothergill. (2010). A renaissance of audio: Podcasting approaches for learning on campus and beyond.

European Journal of Open, Distance and e-Learning. [Online]. Available: https://eric.ed.gov/?id=EJ911751

[56] M.-Y. Chung and H.-S. Kim, "College students' motivations for using podcasts," *Journal of Media Literacy Education*, vol. 7, no, 3, pp. 13–18, 2015. doi: 10.23860/jmle-7-3-2

[57] R. Alarcon, M. Blanca, and R. Bendayan, "Student satisfaction with educational podcasts questionnaire," *Psychological Writings*, vol. 10, no. 2, 2017. doi: 10.5231/psy.writ.2017.14032

[58] P. Araújo and F. Rodrigues, "Podcast learning effectiveness in higher education in Europe: A systematic review," *Social and Behavioral Sciences*, pp. 235–245, 2019. doi: 10.15405/epsbs.2019.11.21

[59] M. A. Millanes, E. E. Paderna, and E. Que, "Podcast-integrated Physics teaching approach: Effects on student conceptual understanding," *The Normal Lights Journal on Teacher Education*, vol. 11, no. 2, 2017.

[60] M. A. Millanes. (2018). Development and evaluation of physics podcasts as instructional materials for grade 9 high school students. [Online]. Available: https://nosteonline.org/wp-content/uploads/2018/05/DEVELOPMENT-AND-EVALUATION-OF-PHYSICS-PODCASTS.pdf

[61] E. Avila and M. K. S. Lavadia, "Investigation of the acceptability and effectiveness of academic podcasts to college students' scholastic performance in Science," *Indian Journal of Science and Technology*, vol. 12, no. 34, pp. 1–8, 2019. doi: 10.17485/ijst/2019/v12i34/127382

[62] A. Perez. (Sep. 2021). Air anytime, anywhere: How Cagayan teachers use podcasts for distance learning. *ABS-CBN News*. [Online]. Available: https://news.abs-cbn.com/news/09/07/21/cagayan-teachers-use-podcasts-for-distance-learning

[63] A. Chan, M. J. W. Lee, and C. McLoughin, "Everyone's learning with podcasting: A Charles Sturt University experience," in *Proc. the 23rd Annual Ascilite Conference: Who's Learning? Whose*, 2006.

[64] K. Almindengen, A. Torbornsen, B. Sparboe-Nilsen, L. G. Kvarme, and J. S. Benth, "Small group student-produced podcasts were favoured as assignment tool for large-scale interprofessional learning: An exploratory study among health, social care, & teacher education program," *Frontiers in Education*, Sep. 17, 2021. doi: 10.3389/feduc.2021.622716

[65] V. Fernandez, P. Simo, and J. M. Sallan, "Past, present, and future of podcasting in higher education," in *Exploring Learning & Teaching in Higher Education, New Frontiers of Educational Research*, M. Li and Y. Zhao, Eds., 2015. doi: 10.1007/978-3-642-55352-3_14

[66] N. Hall and S. Jones, "Student-produced podcasts as a teaching and learning tool," *American Journal of Distance Education*, 2021. doi: 10.1080/08923647.2021.1995256

[67] A. Makina, "Developing a framework for managing the quality use of podcasts in open distance and e-learning environments," *Open Praxis*, vol. 12, no. 1, pp. 67–81, 2020. doi: http://doi.org/10.5944/openpraxis.12.1.990

[68] T. Moore, "Pedagogy, podcasts, and politics: what role does podcasting have in planning education?" *Journal of Planning Education in Research*, vol. 44, no. 3, pp. 1134–1147, 2022. doi: 10.1177/0739456X221106327

[69] Y. B. Kafai and M. Resnick, *Constructionism in Practice*, Lawrence Erlbaum Associates, 1996.

[70] R. E. Mayer. *The Cambridge Handbook of Multimedia Learning (3rd ed.)*, Cambridge University Press, 2020.

[71] M. Ally, "Foundations of educational theory for online learning," *Online Learning and Assessment in Higher Education*, pp. 25–45, 2020.

[72] N. M. Seel, T. Lehmann, P. Blumschein, and O. A. Podolskiy, *Instructional design for learning: Theoretical foundations*, Sense Publishers, 2017.

[73] A. Brown and T. Green, *The Essentials of Instructional Design: Connecting Fundamental Principles with Process and Practice*, 3rd ed., Routledge Taylor & Francis Group, 2016.

[74] R. Sites and A. Green, *Leaving ADDIE for SAM Field Guide: Guidelines and Templates for Developing the Best Learning Experiences*, American Society for Training & Development Press, 2014.

[75] P. Mehran, M. Alizadeh, I. Koguchi, and H. Takemura, "Designing and developing a blended course: Toward best practices for Japanese learners," in *CALL in a Climate of Change: Adapting to Turbulent Global Conditions—Short Papers from EUROCALL 2017*, K. Borthwick, L. Bradley, and S. Thouësny, Eds., Research-publishing.net, 2017, pp. 205–210. doi: 10.14705/rpnet.2017.eurocall2017.714

[76] C. Wolverton and B. G. Hollier, "Guidelines for incorporating active learning into the design of online management courses utilizing the Successive Approximation Model (SAM)," *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, vol. 18, no. 1, pp. 264–274, 2022.

[77] H. Jung, Y. Kim, H. Lee, and Y. Shin, "Advanced instructional design for successive e-learning: Based on the successive approximation model (SAM)," *International Journal on E-Learning*, vol. 18, no. 2, pp. 191–204, 2019. https://www.learntechlib.org/primary/p/187327

[78] A. Wintarti, F. Abadi, and D. K. Fardah, "The instructional design of blended learning on differential calculus using successive approximation model," *Journal of Physics: Conference Series*, 2019. doi: 10.1088/1742-6596/1417/1/012064

[79] C. A. Ali, S. Acquah, and K. Esia-Donkoh, "A comparative study of SAM and ADDIE models in simulating STEM instruction," *African Educational Research Journal*, vol. 9, no. 4, pp. 852–859, 2021.

[80] A. H. Hernawan, L. Dewi, and A. F. Fadillah, "How to design podcast for learning with rapid prototype model," *Edutech*, vol. 20, no. 3, 2021. doi: 10.17509/e.v20i3.40748

[81] T. Plomp, "Educational design research," in *An Introduction to Educational Design Research*, T. Plomp and N. Nieveen, Eds., SLO Netherlands Institute for Curriculum Development, 2010.

[82] S. McKenny and T. Reeves, *Conducting Educational Design Research*, Routledge, 2012.

[83] T. Reeves, S. McKenney, and J. Herrington, "Publishing and perishing: The critical importance of educational design research," in *Proc. Ascilite 2010*, Sydney, 2010.

[84] J. Creswell and J. D. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*, London: SAGE Publications Inc., 2018.

[85] J. T. Tuscano. (2016). The 5Ds framework for integrating technology in the classroom. [Online]. Available: https://francisjimtuscano.com/2016/07/02/5ds-framework-for-tech-integration-from-passive-consumption-to-critical-interaction-to-active-creation/

[86] American Psychology Association. (Jan. 2017). Ethical principles of psychologists and code of conduct. [Online]. Available: https://www.apa.org/ethics/code/ethics-code-2017.pdf

[87] R. G. Sagge and S. P. Bacio, "Video explainer, e-module, or both: Which is better to improve statistics performance of graduate students," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 13, no. 5, pp. 3194–3194, 2024. doi: 10.18178/ijiet.2023.13.9.1942

[88] S. Bacio and R. Sagge, "Development and production of computer-generated instructional materials for college geometry," *Journal of Physics: Conference Series*, vol. 1254, no. 1, 2019. doi: 10.1088/1742-6596/1254/1/012040

[89] R. Sagge and R. Segura, "Designing and developing video lessons in mathematics using code-switching: A design-based research," *International Journal of Information and Education Technology*, vol. 13, no. 9, pp. 1391–1398, 2023. http://www.ijiet.org/show-192-2550-1.html

[90] P. J. Embajador, "Glossary of selected Hiligaynon words: Development and evaluation," in *Proc. Journal of Physics: Conference Series*, vol. 1254, no. 1, 2019. doi: 10.1088/1742-6596/1254/1/012037

[91] P. M. Torion and S. P. Bacio Jr., "Video lessons for the course Introduction to Computing through Online/Offline Mode (ICOM): Its development and evaluation," *International Journal of Information and Education Technology (IJIET)*, vol. 14, no. 6, pp. 845–855, 2024. doi: 10.18178/ijiet.2024.14.6.2110

[92] J. Nabayra, "Teacher-made videos as learning tool in elementary statistics during the pandemic," *International Journal of Information and Education Technology*, vol. 13, no. 1, 2023. http://www.ijiet.org/show-184-2363-1.html