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Development of a Research Design Module for Industry Professionals: A Pilot Study

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ABSTRACT
This study presents a research design module that was developed for and piloted with industry professionals who are new to research. This module aims to enhance their understanding of social science research methods applicable to organizational contexts. The module consisted of three topics, two alignment templates, and two live quizzes to clarify and align their research components. At the beginning of the training, an open-ended question was posed to identify the challenges in their research endeavors. Another question was asked at the end of the module to determine the impact of the intervention. The feedback showed that the participants valued the

proposed innovative alignment templates and found the training to be invaluable in enhancing their knowledge of research design. The interactive nature of the module also facilitated them in acquiring a deeper understanding of research concepts application in their organization. The results prove the value of the proposed module for industry professionals who are new to research. Based on the feedback, several changes to the module should be made to enhance its effectiveness in the future, including incorporating more case studies and examples relevant to diverse research contexts.

Keywords: research methods, module, novice researchers, industry, innovation

BACKGROUND

In today's fast-paced world, organizations must continuously acquire new knowledge (Martin et al., 2014), which means the ability to conduct research stands as one of the most effective means to remain competitive. Developing suitable and appropriate research skills among industry professionals is crucial as this would benefit them in the long run. They can make sense of existing data in their organizations and utilize them effectively to improve existing practices. Gyuris (2018) mentions that research skills benefit individuals through self-regulating, understanding and practicing their metacognitive skills, and applying critical approaches in situations where they have to make decisions or solve problems. This indicates the value in equipping employees of organizations with relevant research skills to help them plan, monitor, evaluate, and maintain their motivation during research (Azmi & Daud, 2018). By obtaining the necessary research skills and reaching the level of experienced researchers, they would develop the autonomy to make decisions based on concrete data and rigorous study.

Among the foundational research skills include inference skills, research design skills, morals and ethics, and integrity (Sumarwati et al., 2021). These skills are important to develop maturity among new researchers and allow them to share the acquired knowledge and skills with their colleagues and subordinates. On top of that, it is vital for new researchers to be critical when writing and communicating their ideas in research, whether through presenting their results or writing research or white papers (Gyuris, 2018). Hence, by possessing these research skills, new researchers, especially those in the industry, can make decisions more independently through proper methods and approaches.

In order to build research skills among industry practitioners, suitable and appropriate teaching methods are needed. One of these methods is the self-questioning strategy, where new researchers should develop the ability to think critically by understanding and deducing from information obtained (Alawneh et al., 2024). When new researchers can answer questions when conducting research, it shows that they can make objective judgments with the available information that they have. These skills are crucial when they are analyzing or interpreting data (Hasan, 2024), especially for organizational data that have direct repercussions on an organization’s practices and strategies. Other than that, employing student-centered and active learning approaches can assist new researchers in enhancing their research skills as well as to participate and engage in research classroom activities (Wahid et al., 2023).

One of the ways to develop research skills among new researchers is through action research. Feng et al. (2023) and Vígh (2024) found that this approach simplifies the understanding of research in the educational setting. This approach is also suitable to be adopted at the industry level, but which could be modified to fit the industry's focus and scope. This would help new researchers attain relevant and suitable research skills to better achieve their research goals. In other words, new researchers should experience the research process as it can foster a supportive and inclusive environment in conducting research (Catama et al., 2024). This means preparing and providing a conducive and positive environment in learning research skills can help them feel safe and comfortable.

One predominant issue faced by new researchers, particularly those within the industry, is that the process of learning research can be overwhelming and confusing as it requires the prior development of certain skills. This overwhelming feeling may be due to the need to analyze and consolidate available data and information (Bingham, 2023; Zuiderwijk et al., 2015) on top of other challenges that contribute to negative feelings in conducting research. Among oft-cited challenges faced by new researchers include searching for topics; anxiety; lacking confidence, conceptual clarity, supportive literature and training; non-supportive infrastructure; discouragements from supervisors and peers; and language barriers (Ameen et al., 2019; Zafar et al., 2021). These challenges may hinder the process of conducting research as new researchers might not be able to equip themselves with accurate and applicable research skills. Moreover, some researchers reported that the process of writing research papers is a daunting experience (Mondal & Mondal, 2023; Shah et al., 2009; Turbek et al., 2016), indicating that new researchers felt that carrying out and writing research is not an easy task. This may be due to the unfamiliar structure of academic writing and that the language and vocabulary used might be different from other types of reporting (e.g. report writing, descriptive writing, technical writing).

Specific to the context of the industry, Laustsen et al. (2021) discovered that the challenges faced by industry professionals with regard to research include feeling divided between practice and research, feeling frustrated waiting for results, the long time needed to complete a research project, lack of knowledge, and feeling that research is an extra task on top of their day-to-day activities. However, the contribution of data, expertise, and knowledge of practices by industry professionals is invaluable to expanding knowledge for the industry and in academia. Their involvement in research is becoming more common as a shared goal between industry and academia. This is to strengthen their collaboration (Ahmed et al., 2022; Marijan & Sen, 2022) in achieving both organizations' goals. This shows that there are values in gaining research skills, suggesting inherent benefits in developing foundational research skills among industry professionals.

As conducting research requires interest, patience and time, these challenges call for the need for researchers to conjointly work together to find suitable solutions and strategies (Kalman, 2019) to gain appropriate knowledge and skills in executing research. Therefore, we developed a module to cater to the needs of these industry professionals, using layman's terms to ease understanding, knowledge transfer, and retention. This module addresses the need of a specific organization that requires some of their employees to be skilled in conducting research to best utilize their company data and improve their practices.

The proposed module was developed to be applicable to all new learners of social science research, using effective learning aids such as live quizzes and templates. It was piloted with a group of industry professionals who were executives, managers and senior managers from various departments in the corporate side of an organization. Most of these industry professionals had very little to no experience in conducting research, warranting the need for this module. Therefore, this paper reports the results from the pilot study of the proposed module.

METHODOLOGY

Module Design and Context

This module was developed to address the need for a training module in social sciences research that builds the knowledge and skills of industrial professionals using layman's language. This was based on a needs analysis that was conducted in-house in one company, which revealed that upskilling was required to build research skills. This was to utilize the company data and improve their practices in improving processes and decision-making. The need was established through feedback received from the participants, who were encouraged to write research papers based on the interpretation of meaningful data within their departments. However, as the industry professionals were not researchers, challenges were faced in determining the scope of the research as well as identifying the research design that needed to be applied in their research, which warranted the need for an upskilling program that can cater to non-researchers.

The development of this training module is grounded in the scaffolding theory, which is derived from Vygotsky's Zone of Proximal Development (ZPD). This concept is particularly relevant for professionals navigating complex tasks in their work environments. By structuring learning experiences to support participants as they tackle complex tasks, this scaffolding approach offers a framework where tasks are organized into progressively more difficult modules, complemented by mentoring and feedback from instructors. This was highlighted by Bauer et al. (2022), who mentions that the learners in their study were overwhelmed with the challenging assignment of diagnosing car malfunctions and would benefit tremendously from scaffolding. Scaffolding helps reduce the complexity of learning by breaking down intricate tasks into manageable steps, all while ensuring that the learning process is actively supervised. Additionally, the scaffolding framework promotes peer support, enabling colleagues to collaborate and facilitate each other's understanding and skill development. As a result, integrating scaffolding into this module not only streamlines the learning experience but also fosters a supportive environment where participants can deepen their understanding of research knowledge with guidance from both facilitators and peers (Shuib et al., 2020). This collaborative aspect is vital in professional settings, where teamwork and shared knowledge are crucial for organizational success. Ultimately, integrating scaffolding into this module creates an effective learning environment that empowers professionals to deepen their understanding of research knowledge and apply it confidently in their work.

Therefore, this module was specifically designed to address a significant gap in existing research training programs, which predominantly cater to academic audiences such as researchers and students. These academic-focused modules often emphasize theoretical

frameworks and methodologies that, while valuable in scholarly contexts, may not translate effectively to the industrial demands. For instance, graduate-level research methods courses typically concentrate on statistical analyses and literature reviews that prioritize depth over applicability, leaving professionals ill-equipped to address real-world tasks. Industry professionals often require hands-on, actionable insights that can be directly implemented within their organizations. For example, a marketing manager may need to design a market research study that quickly evaluates customer preferences, but traditional academic modules may overlook agile methodologies and real-time data collection that are critical in today's fast paced business environment. Therefore, by developing a module tailored to industry professionals with little or no prior experience in social sciences research, we can bridge this critical gap. This module not only introduces foundational research principles but also contextualizes concepts within industry applications, ensuring that novice researchers gain practical skills and knowledge they can immediately apply. By focusing on relevant case studies, hands-on exercises, and collaborative projects, this module empowers participants to conduct research that not is not only research-based but also directly applicable to their professional roles. The module comprises three topics (delivered through lecture-style presentations), two alignment templates, and two live quizzes, which are described in the following sections.

Topic 1: Research Design in Social Sciences Research

The first topic covers qualitative and quantitative designs for social science research. The contents encompass popular research methods such as surveys, interviews, focus group discussions, observation, and document analysis. In addition, because the participants were capable of executing interventions within their departments, attention was also paid to action research as a probable research method that they could execute. The basic process of executing each research method was described, along with crucial considerations that should be noted in selecting each method.

Topic 2: Population, Sampling, & Research Instruments

The second topic relates to population, sampling, and research instruments, which explain common probability and non-probability sampling methods and how they can be determined based on the intended research and population. Common research instruments are also covered, such as the questionnaire, interview protocol, observation checklist, and matrix. For all subtopics, numerous examples are given, and they are related to organization. We also used the organization's in-house surveys to explain concepts. These examples form a crucial part of the module design, as they helped the participants formulate their research ideas and establish parallelisms between their ideas and the examples given. This use of familiar data and practices has been reported to act as a 'hook' to keep learners engaged and simplify the learning process and is highly recommended in training design (Nind, 2020). Throughout the module delivery, short breaks were given to allow participants to develop their research ideas, discuss, ask questions, and interact with the instructors. At the end of the second module, a template was given to help them identify the research design, population, sample, data type, and instrument that they would use in their research.

Topic 3: Alignment of Research Components

The final topic forms the most valuable part of the module (as per the feedback of the participants), which covers the process of aligning the research components. This topic explains the process of aligning the research title, research questions, research objectives, research design, population, sampling, instrument, and data collection procedure in their research. Four methods were provided to align the research components, and examples were given to illustrate the process. In addition, a template was given to help them align the components based on their intended research topics.

Templates for Activities

For this module, two printed templates were distributed to the participants. The first template, called a Research Snapshot, was designed as a guided checklist to help participants select the most appropriate research design, research method, sampling strategy, and instrument based on their intended research objective(s). This template was useful as it provides learners with a one-page snapshot of their research, making it easier to align their research components. However, it was evident during the filling-in of the templates that some research terminologies particularly for sampling strategy such as "stratified", "cluster", and "snowball", were unfamiliar to the participants. Therefore, the softcopy format of the presentation slides from the topics were provided as a reference to assist the participants in filling out the forms.

The second template, called the Research Alignment Template, was designed to assist the participants in aligning and expanding on the details of their research components. Justification questions were provided for each component to help them elaborate on their chosen methodology. For example, in the template, the 'Sampling' component asks questions like, "What is the sample?", "Why did you choose this sample (justification)?" "What is your sampling technique?" and "Why did you choose this sampling technique?" This was designed to help them think more deeply about their research topics and what they intended to do.

Live Quizzes

Two live quizzes were conducted during the training to enhance participant engagement and reinforce learning. The first quiz utilized Kahoot!, a dynamic platform that combines audience responses and audiovisual aids which creates an interactive and stimulating learning environment. This type of game-based learning activity facilitates retention and improves motivation in a class setting (Wang & Tahir, 2020; Martin et al., 2014). By incorporating elements of gamification, such as competition and immediate feedback, live quizzes can transform traditional learning dynamics, making the learning process more impactful. For the purpose of this module, ten (10) questions were developed on Kahoot! to gauge the participants' understanding of Topic 1 (Research Design in Social Sciences Research) and Topic 2 (Population, Sampling, & Research Instruments). The use of varied question formats, including both open-ended and multiple-choice questions, allows for a comprehensive evaluation of

participants' knowledge. For instance, multiple-choice questions (as in Figure 1) in this quiz provide a quick assessment of factual knowledge and comprehension among the participants.

Additionally, the immediate feedback offered through Kahoot! enables participants to identify areas of strength and weakness in real-time, fostering a growth mindset. This instant feedback loop not only aids in retention but also encourages participants to engage more actively with the material. By structuring the quizzes around essential topics, participants are incentivized to focus on key concepts. Additionally, the decision to integrate live quizzes was attributed to creating a sense of community among the participants as they share insights and discuss answers collectively. This collaborative environment is crucial for adult learners, who often benefit from peer interaction and shared experiences. Overall, the implementation of live quizzes serves as an effective pedagogical tool to reinforce learning objectives, foster engagement, and build a supportive learning setting.

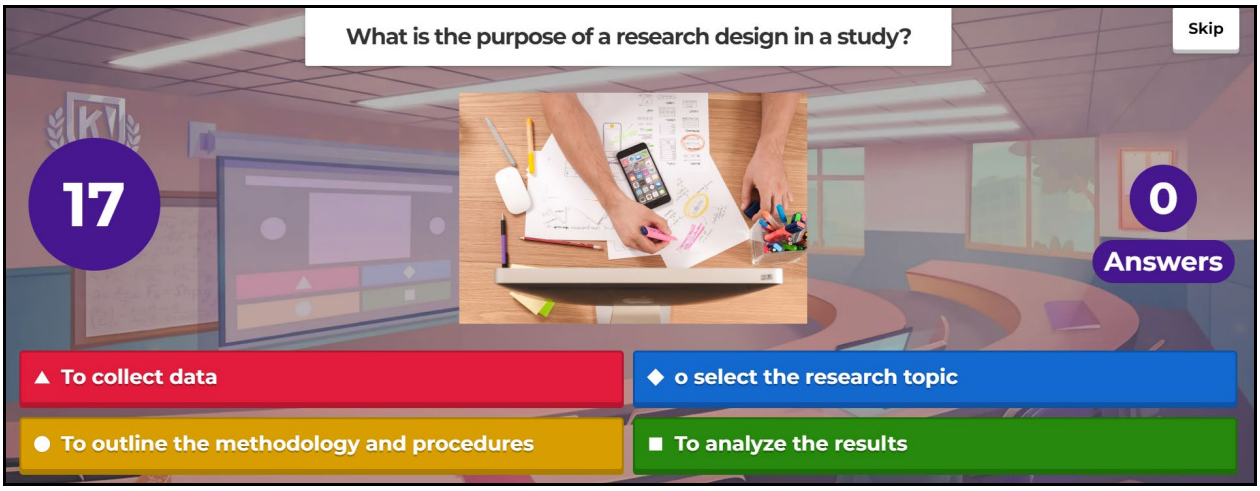


Figure 1. Kahoot! Quiz Question Sample

In conducting the quiz, the format of the quiz was briefly explained to the participants first, and they were subsequently prompted to enter the quiz by scanning the displayed QR code or entering the quiz code into their own devices (mobile phones, laptops or tablets). For this quiz, participants can score up to 1000 points for a correct single-select answer. Points were calculated based on the speed at which they answered, with a point reduction formula applied when a correct response was recorded 0.5 seconds after the timer started. The time given for participants to answer the questions varied based on the question format, whereby 40-60 seconds were allocated for open-ended questions and 20 seconds were given for multiple choice questions. The facilitator then explained the answer and justification after each question. Also, participants were encouraged to discuss with the facilitator and among themselves about alternative answers for each question. This discussion was conducted immediately after each question to help increase the quality of feedback from the facilitator, maintain engagement with the participants, and encourage efficiency, as the facilitator did not need to backtrack or rush the questions all at once.

The second live quiz was conducted via a set of PowerPoint slides, where each slide contained a research snapshot with one component that was out of alignment with the research

design. This was designed based on the strategies of problem-based and error-based learning, which has been noted as effective in engaging learners in training programs (Nafukho et al., 2017). In this activity, the participants were asked to identify the component that was out of alignment. An example is a qualitative study that claims to use simple random sampling. Identifying these misalignments led to rich and deep conversations on research designs and components, which further developed the participants' understanding of basic research.

Participants

The participants were 22 industry professionals who were executives, managers and senior managers from various departments in the corporate side of an organization. With the exception of three to four participants who had had some exposure to research prior to the training, the participants had not conducted or published research papers beforehand but had already generated research ideas that they were interested in exploring.

Format of the Training

This training was designed to be conducted in one day to cater to the busy schedules of the industry practitioners. This follows the recommendation of Martin et al. (2014), who found that training that requires longer time commitments tends to be less desirable. For the pilot, one main facilitator experienced in qualitative research and one co-facilitator experienced in quantitative research (both authors of this paper) delivered the module. The varied expertise on research methods was critical to cater to the questions and needs of the audience, who were also pursuing both methods of research for their organization.

The participants were seated at round tables to encourage discussions. They were also grouped based on their preferred research design, whether qualitative or quantitative. Figure 2 below depicts the flowchart of the module delivery.

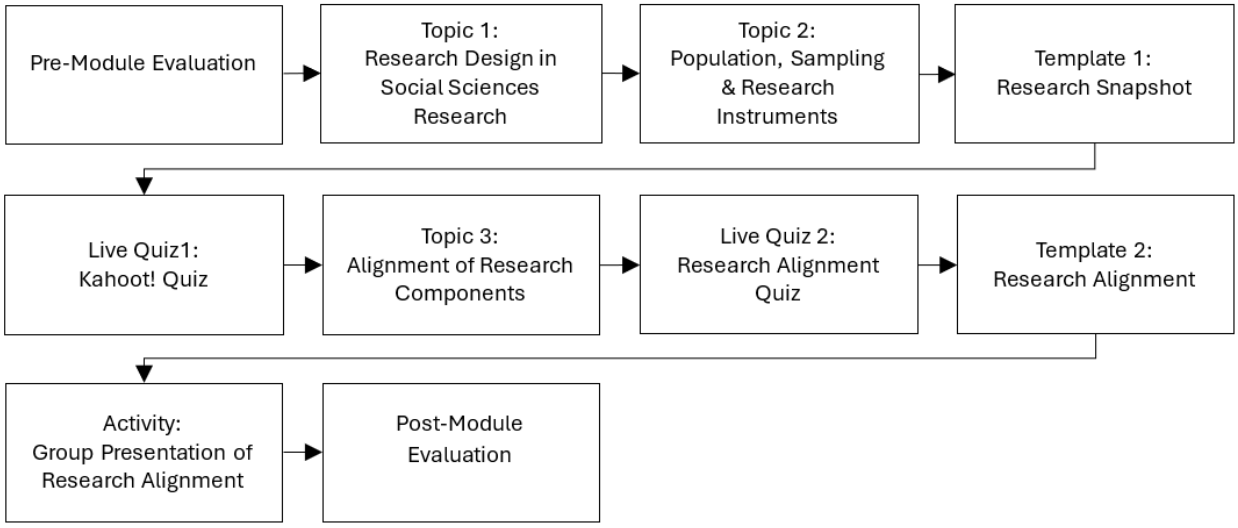


Figure 2. Module Flowchart

Based on Figure 2, the module began with a pre-module evaluation followed by the consecutive delivery of the first two topics to build their foundational knowledge of research design. The participants were then given the Snapshot template to narrow down and refine their research ideas. Following this, the first live Kahoot! quiz was conducted to test their understanding of the topics. Then, the third topic was delivered, followed by the second live quiz. The Research Alignment Template was provided to build their knowledge based on the previous Snapshot. The participants then had to choose one research topic within their respective tables for the group presentation to enable deeper discussions between the participants and the instructors. The module ended with a post-module evaluation. Throughout the training, open conversations and discussions were held, a crucial part of the training, as it avoided the risk of one-way communication, a frequent issue cited in lecture-style training (Martin et al., 2014).

Evaluation of Training

To evaluate the effectiveness of the training, pre-and post-module questions, templates, and live quizzes were utilized. For the pre-module question, an application was used where participants could submit live anonymous answers to a given question to encourage honest responses. The question asked was, "What challenges do you face in producing your research paper?" A similar method was employed during the post-module session, where the participants were asked the following: "How has this module today helped you in producing your research paper?" We also actively observed the participants during the module to gauge their attention, understanding, interest, and participation. The results are discussed in the following section.

RESULTS AND DISCUSSION

Pre-Module Question

Before the training began, we asked the participants to answer the following open-ended question: "What challenges did you face in producing your research paper?" Twenty-two responses were collected for this question, and the answers are grouped as tabulated below.

Table 1. Challenges Faced by Participants in Conducting Research

No.	Category	Example Responses	Frequency
1.	Time Constraints	● "Time constraints" ● "Load of BAU [business as usual]" ● "Time management" ● "Priority in research on top of other core deliverables"	7
2.	Research Focus	● "Undecided the focus area" ● "Scoping" ● "Refining research topic" ● "How to identify the right research area(s) to	6

		kick start the journey" ● "Narrowing down my target objective" ● "Deciding on the topic of research"	
3.	Problem Statement	● "Finding the good problem statement" ● "Establishing the framework and picking up the right element/gap"	2
4.	Limited Resources	● "Resources = money or people." ● "Resources"	2

Based on the answers given in Table 1 above, the predominant issue faced by the participants was time constraints, which was mentioned by seven participants. This was caused by issues such as "load of BAU", which stands for "business as usual". In the workplace, BAU refers to the core tasks and routine activities that employees complete daily. This indicates that the participants faced time constraints as the daily workplace activities were already time-consuming, leaving little time for them to focus on research. This aligns closely with the comment, "Priority in research on top of other core deliverables", where "core deliverables" refer to the core tasks that the participants needed to complete and deliver by a set deadline. Therefore, as research is less constrained by tight deadlines, this led to issues of prioritization.

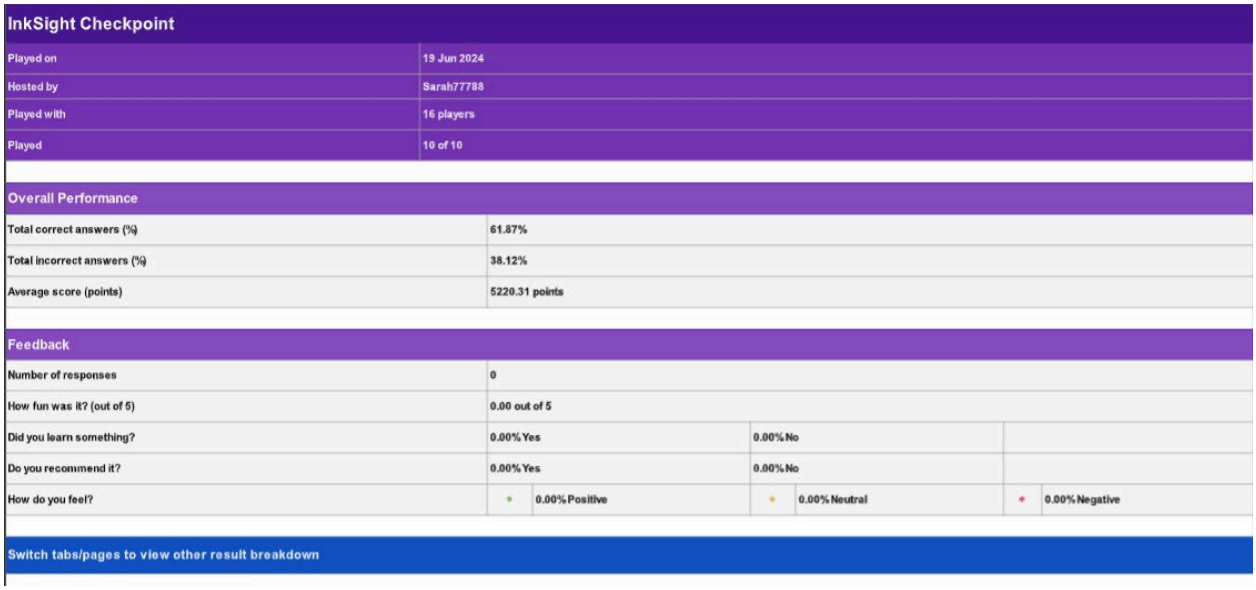
Other issues that were uncovered in the survey included refining the scope of research, which was mentioned by six participants. Two participants each responded to the problem statement or research gap being their biggest challenge, followed by constraints in resources. Other individual responses included issues with finding prior studies, managing sensitive data, lacking knowledge in research, lacking technical writing skills, and not knowing how to analyze data.

The challenges that the participants of our training faced differ significantly from those that have been reported in past studies (Gunn, 2017; Nind & Lewthwaite, 2017; Earley, 2014). For example, Gunn (2017) and Nind and Lewthwaite (2017) noted that some of the most common challenges in research methods courses are students failing to see the relevance of the course, are uninterested or unmotivated, and have poor attitudes toward research methods and research. Some students also face challenges in mastering fundamental concepts and linking theory to practice (Daniel, 2019). However, these learners are mostly centered in academia and not within the industry, like the participants of our module. Therefore, our study provides a unique view of the challenges presented by adult learners who willingly attend the training, and it was found that the main concerns were time constraints and their knowledge limitations, which explained why they opted for the training in the first place.

Live Quizzes Results

The Kahoot! quiz session effectively assessed participants' understanding of research design. The facilitator first displayed the leaderboard, highlighting the top five scores, concluded with a podium for the top three participants, identified only by their nicknames. The quiz results,

illustrated in Figure 3, revealed a total correct answer percentage of 61.87% and an average score of 5220.31 points. This suggests that many participants had a solid grasp of foundational concepts, particularly in sampling and research approaches. However, some participants answered several questions incorrectly, which facilitated discussions about the reasons for their confusion. Overall, the quiz provided valuable insights into participants' strengths and areas for improvement (Licorish et al., 2018), encouraging them to self-evaluate their research literacy following the module.



InkSight Checkpoint			
Played on	19 Jun 2024		
Hosted by	Sarah77788		
Played with	16 players		
Played	10 of 10		
Overall Performance			
Total correct answers (%)	61.87%		
Total incorrect answers (%)	38.12%		
Average score (points)	5220.31 points		
Feedback			
Number of responses	0		
How fun was it? (out of 5)	0.00 out of 5		
Did you learn something?	0.00% Yes	0.00% No	
Do you recommend it?	0.00% Yes	0.00% No	
How do you feel?	0.00% Positive	0.00% Neutral	0.00% Negative
Switch tabs/pages to view other result breakdown			

Figure 3. Result Summary of Kahoot! Quiz

Post-Module Question

At the end of the training, the participants were required to answer the following question: "How has this module today helped you in producing your research paper?" Nine responses were obtained. The low response rate was due to some of the participants having to leave the training earlier to attend meetings and work-related matters. This occurred during the afternoon session, once all topics had been delivered and the participants had to begin brainstorming ideas for the group presentation. The low response rates meant that the overall post-module evaluation could not fully capture the extent to which the module had benefited the participants. It also provided evidence that the participants' day-to-day business activities made it challenging for them to prioritize their involvement in research activities, which is not a core part of their job. Table 2 below tabulates the responses received for the post-module question.

Table 2. How the Module Assisted the Participants

No.	Category	Example Responses	Frequency
1.	Structure	● "Helpful to structure my research design for better data gathering & analysis" ● "The research method has helped me with the process of structuring a research paper"	4

		● "The structure and application in class really help" ● "Understand the research structure"	
2.	Clarity	● "Much clarity on the steps" ● "Clarity on the research design components"	2

Based on the answers in Table 2, four of the participants said that the training was helpful in structuring their research design. It is likely that the structure was useful as it would help guide them through the process of writing the research paper and in ensuring that all components were aligned and had been addressed. This may shorten the learning process required, which is essential due to the time constraints they normally face in writing research papers. Next, two of the participants said that they gained clarity on the steps that needed to be taken to conduct research as well as the research components. For non-researchers, understanding the key components such as research questions, methodology, data collection, and sampling methods provides a clear roadmap that helps them navigate the research writing process. This also helps break down the research into manageable components, making it less daunting and more achievable. In addition, other responses were that the module helped them think critically about the topic that they wanted to explore, it strengthened their understanding of research, and that they had gained valuable insights on the process of writing research. This indicates that overall, the participants found the module to be valuable and useful in increasing their knowledge and understanding of research.

Observation of the Participants

Throughout the module, we paid close attention to the participants to gauge their attention, understanding, interest, and participation. We noticed that initially, some participants had their laptops turned on to check work-related emails and messages. However, as the training progressed, these participants began to focus more on completing the tasks given and conducting discussions amongst themselves. They also requested a softcopy version of the printed templates as they found it easier to write their responses in more detail using their computers.

All participants asked questions, many of them repeatedly, and many also asked for feedback on their research ideas, or how they could utilize existing data from their day-to-day jobs to derive meaningful results. All were actively engaged in discussions as they traded ideas and feedback, and some were also collaborating on the same research idea. These "learning conversations" have been noted to be especially beneficial for advanced learners as they allow them to make sense of what they have learned (Nind et al., 2019; Matos et al., 2023; Martin et al., 2014). The active involvement of the participants also showed that they were engaged with the contents of the module as they were constantly reflecting on their research ideas.

Unfortunately, a few participants could not stay for the entire duration of the one-day training due to pressing work commitments and meetings, which required them to leave the session early. However, many excused themselves after the third topic was delivered when the remaining sessions focused on activities and group presentations, which suggested that they found the contents of the module to be invaluable.

Significance of the Training

This training is significant for a number of reasons. Firstly, this training holds significance as it is designed for a large audience (industry professionals) that possesses a wealth of data, processes, and best practices that can be captured by research and publications to improve industry and academic practices. Upskilling this population in foundational research skills is a strategy that has received very little attention in papers that discuss potential collaboration efforts between the industry and the university. Therefore, this paper addresses this gap by providing a solution for training that can be conducted to build some of this foundational knowledge within one day to cater to their time commitments and busy schedules. Apart from that, insufficient attention has been given to the pedagogy of advanced learning for social science research methodologies (Gunn, 2017), particularly those that make use of holistic learning methods (Nind et al., 2019; Daniel, 2019). This underscores the value of this pilot study, as it enmeshes best practices in workplace training for the teaching and learning of social science research. Additionally, this training module not only bridges the gap between industry and academia but also fosters a culture of continuous learning and innovation among industry professionals. By equipping them with robust research skills, the training enables these professionals to systematically investigate and solve complex problems, driving both organizational growth and broader industry advancements. This approach not only enhances their individual competencies but also contributes to the creation of a more dynamic and research-oriented industry landscape.

The implications of this pilot study are multifaceted, as it offers insights that are valuable for both academia and the industry. Firstly, the study highlights the feasibility of upskilling industry professionals in a short time frame, which provides a viable approach to bridge the gap between academia and industry. The upskilling of industry professionals in research can lead to a wider dissemination of knowledge that can benefit the public and academic sector through the enhancement of scholarly works. It also points to opportunities for collaboration between universities and organizations, where researchers in universities can play a key role in the writing and publishing of industrial knowledge. Finally, this pilot study has implications to professional training, particularly regarding the considerations that should be noted for teaching research skills to non-academic professionals. Such training, if delivered to a wider array of industries, can contribute to a more research-focused and innovation-driven landscape as academic rigor is applied to the research of real-world challenges and practices.

RECOMMENDATIONS AND CONCLUSION

This intervention met its intended purpose, which was to design, develop and pilot a module on fundamental research design in social sciences research that builds the knowledge and skills of industry professionals who are non-researchers using layman language. Through the pilot delivery of the module, several best practices can be recommended. Firstly, the one-page user-friendly templates were useful to provide clarity to learners on the topics covered, especially on complicated and interrelated topics such as the components of a research design. They were able to use these templates to directly build upon and develop their existing research ideas. Secondly, the use of “cases” where the instructor purposefully gave wrong examples was beneficial to

developing learners' critical thinking skills and learning from "errors." Next, the use of live quizzes using game-based facilities made the learning experience more enjoyable and allowed us to immediately recognize whether the participants had internalized the contents of the topics delivered.

However, this study is not without its limitations, which must be acknowledged. Firstly, the small sample size slightly restricts the generalizability of the findings. While the results offer valuable insights on the application of suitable materials for training, they should be considered as a preliminary reference for future research rather than definitive materials. Furthermore, the training program duration of just one day resulted in a narrow scope of data, limiting the richness of the findings. Therefore, a mixed-methods approach that combines both quantitative and qualitative data could be employed, allowing for triangulation and a more comprehensive analysis. Additionally, it is important to note that certain data were withheld due to organizational privacy policies. Addressing these limitations in future research will be essential for advancing module development for professionals.

Moving forward, several recommendations can be made to further improve the participants' research skills. Firstly, some of the participants requested more examples; this can be provided through handouts, sample research papers and written components to further help them internalize the contents of the module. Secondly, alternatively, to the first recommendation, a single case can be employed to scaffold the learning of research methods by allowing learners to better visualize a full research process (Reddy, 2020), which may be especially useful for a module on data analysis. Next, some learners requested one-on-one coaching sessions after the module, which can be explored if time and resources permit. By implementing these recommendations, the research skills of industry professionals can be significantly enhanced, ensuring they are better equipped to conduct thorough and impactful research in their respective fields that address the demands of a fast-paced world.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article. There are no financial or personal relationships that could influence the content of this article.

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Authors' Contributions

The first author led the results and discussion sections, while the second author developed the theoretical framwork and methodology write-ups. Both the first and second authors managed the pilot study and data collection at the selected organization. The third author wrote the introduction and discussed the limitations of this study.

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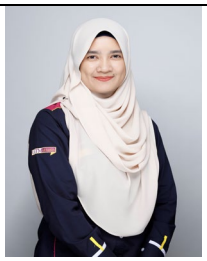	Maisarah Ahmad Kamil is a lecturer from the English Language Department at Academy of Language Studies, Universiti Teknologi MARA. Her research interests include professional communication, business and workplace communication, writing skills, and communication competence. She is currently a doctoral student at Universiti Teknologi MARA focusing on English language communication competence for graduate employability.
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