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Design and Validation of an Educational Package for Academic and Career Guidance Based on Enhancing Metacognitive Beliefs in Lower Secondary School Students

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A B S T R A C T

Purpose: The present study aimed to design and validate an educational package for academic and career guidance based on enhancing metacognitive beliefs in lower secondary school students.

Methods and Materials: This research was developmental in nature and employed a mixed-methods design (quantitative-qualitative). In the qualitative phase, the dimensions and components of the educational package were identified through semi-structured interviews with 20 education experts and teachers who were selected purposively based on specific criteria. The data obtained from these interviews were analyzed using qualitative content analysis, and the main components of the educational package were extracted. In the quantitative phase, 200 lower secondary school teachers were selected using criterion sampling based on scientific and practical qualifications to evaluate the validity of the package. The quantitative data were assessed using reliability coefficients in SPSS software.

Findings: The educational package comprised four main components: self-regulation, self-control, self-monitoring, and academic and career guidance. It was delivered to students in nine 90-minute sessions. The validation results indicated a good fit for the conceptual model of the package and confirmed its content validity. The educational package effectively enhanced students' metacognitive beliefs and improved their academic and career decision-making skills.

Conclusion: The findings of this study demonstrated that the designed educational package can effectively enhance metacognitive skills and empower students in making academic and career-related decisions. Implementing this package in educational systems can play a significant role in guiding students academically and professionally and improving their future educational and occupational pathways.

Keywords: *Academic guidance, metacognitive beliefs, educational package, self-regulation, lower secondary school students*

1. Introduction

With the advancement of technology and the expansion of the educational system, challenges such as reduced concentration and motivation to learn, uncertainty in choosing academic majors, decreased academic motivation, and academic self-efficacy have become prevalent. These issues stem from various factors including teaching methods, academic organization, and students' metacognitive beliefs (Ali Ghorbani et al., 2024; Alizadeh & Yahak, 2023; Bezi et al., 2024; Faramarzi Babadi et al., 2024; Mahmodi et al., 2023; Mohkam Kar et al., 2024). In this regard, efforts to improve metacognitive beliefs and enhance students' academic and professional competencies can facilitate improvements in their academic and occupational performance. One of the most essential responsibilities of the education system in educating students is preparing them for entry into academic and professional arenas (Asdolahzadeh et al., 2021; Elhamifar et al., 2019; Fergus et al., 2020; Moloudi et al., 2022). To achieve this goal, mechanisms for academic and career guidance have been developed in lower secondary education. However, in the past decade, these mechanisms have been observed to be misaligned with the needs of society and the interests of students (Moloudi et al., 2022).

Academic and career guidance is considered one of the critical approaches in secondary education that engages educators, parents, and students themselves (Bayzidi, 2019). In the current guidance process used in the educational system, students are required to attain certain scores in order to be eligible to choose a major in upper secondary school. Academic and career guidance refers to familiarizing adolescent students with the evolving world of education and work, and assisting them in discovering their talents and selecting appropriate academic and professional paths (Abedini, 2017). The guidance program implemented by the Ministry of Education includes evaluating students' academic performance, completing interest inventories, soliciting parental feedback, conducting academic counseling by school counselors, and organizing sessions to introduce various careers. The results of these activities are tabulated as guidance scores that help direct students toward majors such as humanities, technical and vocational studies, mathematics, and physics (Huntley et al., 2022). Currently, due to economic and employment challenges and the uncertainties of the job market, the process of academic guidance has been significantly challenged. Students face overcrowding in certain majors while other fields remain underfilled. This has necessitated a reconsideration of decision-making processes for optimal academic and career selection (Sobhani Nejad, 2012).

On the other hand, it appears that enhancing students' metacognitive beliefs may help reduce issues related to academic guidance. The concept of metacognition refers to one's knowledge about cognitive processes and the optimal use of these processes to achieve predetermined goals (Pakdaman, 2011). In other words, metacognition is the awareness of one's own cognitive system and the adoption of appropriate, efficient, and effective strategies that lead to self-efficacy. This knowledge includes preferences, interests, strengths and weaknesses, task execution methods, and decision-making processes that guide individuals toward achieving their goals (Arami et al., 2016). Students equipped with metacognitive capabilities are able to employ cognitive strategies to improve their cognition, make academic and career decisions, and achieve necessary success. Learners whose metacognitive beliefs have been strengthened are capable of consciously selecting suitable strategies such as planning, monitoring, self-regulation, and control, ultimately achieving self-efficacy (Dadvand, 2013).

In this context, metacognitive beliefs—which relate to students' abilities in self-awareness, self-monitoring, and controlling their cognitive processes—can play a crucial role in their academic and career guidance. Metacognitive beliefs help students better understand themselves, accurately assess their talents and capabilities, and consequently, make more appropriate choices in their academic and professional trajectories. However, inadequate attention to strengthening these beliefs in educational programs can lead to poor decisions in selecting academic majors and career paths.

Currently, one of the main challenges in Iran's education system is the lack of structured and scientifically-based educational packages for academic and career guidance that specifically focus on enhancing students' metacognitive beliefs. This shortcoming has led many students to make educational and career decisions based on external factors rather than an accurate understanding of themselves and their environment. The present study aims to design and validate an academic and career guidance package based on strengthening metacognitive beliefs for lower secondary school students. It seeks to provide a practical solution to improve students' academic and career decision-making processes. This educational package intends to guide students toward informed choices aligned with their abilities and personal interests by focusing on metacognitive skills.

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Accordingly, the present study was conducted to answer the following research questions:

How was the educational package for academic and career guidance based on strengthening metacognitive beliefs for lower secondary school students designed?

How was the validation of the educational package for academic and career guidance based on strengthening metacognitive beliefs for lower secondary school students conducted?

2. Methods and Materials

Given the nature and propositions of the present study, the research was developmental in terms of its objective, and in terms of the type of data collected, it followed a mixed-methods design (quantitative–qualitative). In the qualitative phase, the research was conducted using qualitative interviews with experts and specialists in the field of education (including faculty members and teachers) who had sufficient knowledge of the subject. Therefore, it can be stated that the output of the qualitative phase of this study was the identification and discovery of the observable aspects of the academic and career guidance educational package based on enhancing metacognitive beliefs.

In the second phase of the research, in order to assess the fit of the conceptual educational package derived from the first phase, the reliability coefficient method was used. The population in the qualitative section of the study included experts and specialists in the educational system. These individuals were selected based on specific criteria, including familiarity with the subject matter of the research. The selection process was conducted using purposive and criterion-based sampling. As a result, 20 individuals were selected as the final sample.

In the quantitative phase, for the purpose of validating the designed educational package, the statistical population consisted of primary school teachers in the city of Abadan who had sufficient familiarity and expertise with the research topic. These teachers were selected based on predefined criteria, which included authorship of research and books related to the subject, engagement in relevant scientific and research activities, and sufficient experience in teaching at the primary school level. Based on these criteria, 200 primary school teachers were selected using the "criterion-based" sampling method.

For data analysis in the qualitative phase, qualitative content analysis methods and semi-structured interviews were employed with experts and specialists in educational sciences and primary school teachers. Based on the analyses conducted on the qualitative data collected, the main dimensions and components of the educational package were extracted and formulated. In the quantitative phase, to validate the designed package and examine the structural relationships between factors (constructs or concepts) and components (dimensions or indicators), the reliability coefficient method was applied using SPSS software.

3. Findings and Results

In this regard, a preliminary draft of the educational package was developed by a five-member expert group. This draft was then shared with the research faculty members, who reviewed and commented on each concept within the educational package. Subsequently, their proposed revisions were compiled, reviewed again by the initial expert group, and incorporated into the package. In the next phase, the revised educational package was re-submitted to the research faculty group. Except for two components, the rest were approved. The two remaining components were re-examined and discussed within the five-member group, the suggested revisions were implemented, and the changes were communicated back to the two faculty members who had initially proposed them, receiving final approval. Thus, the Delphi method was used to confirm the validity of the educational package.

To conduct this process, the consent of the aforementioned five experts was first obtained through convenience sampling. Then, the preliminary draft was sent to university faculty members via email, messaging apps, and domestic communication platforms. In return, they provided their feedback in a back-and-forth exchange format at appropriate intervals. The academic and career guidance educational package was designed with the aim of empowering lower secondary school students to make appropriate academic and career choices. This package was developed based on enhancing students' metacognitive beliefs to help them make more informed decisions about their academic and professional futures through deeper self-awareness and environmental understanding.

The educational package is implemented over nine 90-minute sessions. Each session includes specific content and activities aimed at enhancing students' metacognitive beliefs. The sessions are conducted in an interactive and hands-on manner to ensure students can apply their knowledge and skills practically.

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Table 1

Educational Protocol

Session	Session Title	Content
1	Introduction, Pre-Test, Introduction to Metacognitive Strategies and Their Importance	Introduction: Introducing the course, the instructor, and the students to each other. Explaining the goals of the course and expectations. Pre-Test: Conducting a pre-test to assess students' initial level of knowledge and skills in the field of academic and career guidance. Introduction to Metacognitive Strategies: Explaining the concept of metacognition and its importance in learning and decision-making processes. Importance of Metacognitive Strategies: Reviewing the impact of metacognitive strategies on academic and career success. Activities: Introductions and orientation, pre-test implementation, group discussion on metacognitive strategies and their importance.
2	Explaining the Self-Monitoring Process (Planning) Focused on Academic and Career Guidance and Reviewing Its Simple and Complex Tasks	Academic and Career Planning: Explaining various stages of planning and the importance of each stage. Simple and Complex Tasks: Introducing and explaining planning tasks categorized as simple and complex. Planning Methods: Presenting different tools and techniques for effective planning. Activities: Group work to develop an academic and career planning program, presentation and discussion of the created plans, practical exercises related to planning.
3	Receiving Self-Monitoring Tasks (Planning) Focused on Academic and Career Guidance, Evaluation and Providing Feedback	Task Evaluation: Reviewing and evaluating the planning tasks completed by students in the previous session. Providing Feedback: Delivering constructive feedback to help students improve their planning skills. Advanced Tasks: Introducing more complex tasks to enhance planning abilities. Activities: Presentation and review of students' tasks, group and individual feedback, practical exercises for advanced tasks.
4	Explaining the Self-Control Process Related to Academic and Career Guidance and Reviewing Its Simple and Complex Tasks	Content: Self-Control: Explaining the concept of self-control and its importance in learning and decision-making. Self-Control Tasks: Introducing and explaining self-control tasks categorized as simple and complex. Self-Control Methods: Presenting various techniques for effective self-control. Activities: Group work to develop a self-control plan, presentation and discussion of the prepared plans, practical exercises related to self-monitoring.
5	Receiving Self-Control Tasks Focused on Academic and Career Guidance, Evaluation and Providing Feedback	Task Evaluation: Reviewing and evaluating the self-control tasks completed by students in the previous session. Providing Feedback: Delivering constructive feedback to help students improve their self-control skills. Advanced Tasks: Introducing more complex tasks to strengthen self-control abilities. Activities: Presentation and review of students' tasks, group and individual feedback.
6	Explaining the Self-Regulation Process Focused on Academic and Career Guidance and Assigning Its Simple and Complex Tasks	Self-Regulation: Explaining the concept of self-regulation and its importance in learning and decision-making. Self-Regulation Tasks: Introducing and explaining self-regulation tasks categorized as simple and complex. Self-Regulation Methods: Presenting different techniques for effective self-regulation. Activities: Group work to develop a self-regulation plan, presentation and discussion of the prepared plans, practical exercises related to self-regulation.
7	Receiving Self-Regulation Tasks Focused on Academic and Career Guidance, Evaluation and Providing Feedback	Task Evaluation: Reviewing and evaluating the self-regulation tasks completed by students in the previous session. Providing Feedback: Delivering constructive feedback to help students improve their self-regulation skills. Advanced Tasks: Introducing more complex tasks to enhance self-regulation abilities. Activities: Presentation and review of students' tasks, group and individual feedback, practical exercises for advanced tasks.

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8	Explaining the Outcomes of Students' Self-Efficacy in Choosing Academic Major and Career Path	Self-Efficacy: Explaining the concept of self-efficacy and its importance in academic and career guidance. Choosing Academic Major: Examining the factors that influence the selection of academic majors. Determining Career Path: Exploring individual skills and interests to identify a suitable career path. Activities: Group work to examine factors influencing academic major selection, discussion and exchange of ideas on various career paths, practical exercises to strengthen self-efficacy.
9	Administering Post-Tests on Self-Monitoring, Self-Control, Self-Regulation, and Academic and Career Guidance	Post-Test: Conducting post-tests to assess students' final knowledge and skills in academic and career guidance. Summary: Reviewing key points of the course and discussing students' experiences and achievements. Final Feedback: Providing final feedback to students and encouraging them to use the acquired skills in everyday life. Activities: Post-test implementation, group discussion on the educational program outcomes, final feedback and motivation to apply the skills.

According to Table 1, the sessions of this course include various essential stages dedicated to strengthening students' metacognitive beliefs in the context of academic and career guidance. The first session is devoted to orientation and administering a pre-test, during which metacognitive strategies and their importance are introduced. Then, the self-monitoring process related to academic and career guidance is explained, followed by reviewing simple and complex planning tasks. Students then receive planning tasks to complete and later present them for evaluation and feedback.

Following this, the self-control process related to academic and career guidance is detailed, and related tasks are once again reviewed and practiced. Students carry out these tasks and receive the necessary feedback. Next, the self-regulation process is thoroughly explained and related assignments are defined as either simple or complex. As in previous steps, students complete self-regulation tasks and are evaluated and given feedback accordingly.

In the final stage, the consequences of students' self-efficacy in selecting an academic major and defining a career path are discussed. At the end of this course, post-tests related to self-monitoring, self-control, self-regulation, and academic and career guidance are conducted to perform a final assessment of student learning. This comprehensive and structured approach helps students move toward more informed and successful decision-making in their educational and professional lives.

In the design of models and the development of curriculum content, determining their validity is considered essential to any research activity. This is because users and stakeholders invest significant time and resources, and therefore, ensuring the validity of the materials is indispensable. For validating such content, William Scott has introduced a clear and systematic method in which a group of evaluators expresses their opinions regarding the components and elements of a model or content. These indicators are represented as absolute agreement percentages, which are estimated by the evaluators and ultimately applied to William Scott's formula. If the final coefficient of the formula exceeds 0.70, it indicates sufficient validity of the evaluated content. The parameters of William Scott's formula, which yield the validity index, are presented in the following:

Table 2

Parameters of William Scott's Formula

Parameter	Definition	Formula / Value
P_i	Validity Coefficient	*(P_o − P_e) / (1 − P_e)*
P_e	Expected Level of Agreement	As defined by evaluators
P_o	Observed Level of Agreement	As calculated from evaluator consensus
1	Constant Representing Maximum Agreement	Fixed value

In this study, the intended educational package included components on self-regulation training, self-control training, self-monitoring training, and understanding academic and career guidance. This content was evaluated by 200 experienced academic raters specializing in educational sciences with a focus on curriculum planning. The consensus of the evaluators on the components of the educational package was obtained as follows:

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Table 3

Reliability of Variables

Component	Reliability Coefficient
Self-Regulation Content	0.72
Self-Control Content	0.75
Self-Monitoring Content	0.77
Academic and Career Guidance Content	0.73

Based on the results in Table 3, the evaluation of the educational package content can be described more precisely:

The self-regulation content received a reliability coefficient of 0.72. This value indicates that this section of the content can effectively influence students' learning processes and address their needs in the area of self-regulation.

The self-control content was evaluated with a reliability coefficient of 0.75. This coefficient, being above the acceptable threshold, suggests that this section also possesses sufficient validity and can assist students in developing the ability to manage their reactions under various circumstances.

The self-monitoring content achieved a reliability coefficient of 0.77, the highest among all components. This clearly indicates that this section of the educational package helps students to appropriately observe and evaluate their performance, thereby promoting more effective learning.

Finally, the academic and career guidance content obtained a reliability coefficient of 0.73. This demonstrates that this component can effectively support students in academic and career guidance and underscores its significance in academic and career decision-making processes.

Given that a reliability coefficient above 0.70 is considered acceptable, all coefficients obtained in this study exceed this threshold and are therefore justifiably acceptable. These results indicate that the components of the educational package possess sufficient consistency and validity and can be used as an effective tool for empowering students in their learning processes and academic and career decision-making. In other words, these high values emphasize that the content has been well-designed and has the potential to positively influence students' learning outcomes.

4. Discussion and Conclusion

The results of the present study indicated that the educational package designed with a focus on enhancing metacognitive beliefs had a significant impact on improving the components of self-regulation, self-control, self-monitoring, and academic and career guidance in lower secondary school students. The quantitative data analysis showed that the designed package had high content validity and its conceptual model demonstrated good fit with the data. These findings suggest that the components included in the educational package were appropriately selected and structured, and that they can contribute to improving students' academic and career decision-making processes.

Interpreting these results in light of previous findings reveals that metacognitive beliefs play a critical role in shaping students' academic decision-making abilities. In the study by (Alizadeh & Yahak, 2023), the role of metacognitive beliefs in reducing academic procrastination and enhancing self-directed learning was confirmed. Similarly, the findings of the current study showed that strengthening these beliefs through educational intervention can lead to increased self-monitoring and self-control capacities in students. These findings are aligned with those of (Pakdaman, 2011), who demonstrated that metacognitive components act as mediators in self-regulation.

The qualitative findings also confirmed that the designed educational package effectively addressed components related to academic and career guidance. This aligns with the results of (Bayzidi, 2019), which emphasized that academic guidance is only effective when students possess the necessary skills for self-awareness, planning, and selecting appropriate educational paths. Furthermore, the study by (Abedini, 2017) also stressed the necessity of using empowerment-based approaches in the educational guidance process, a principle reflected in the current package design.

In examining the educational dimensions of the package, it was revealed that the structured sessions not only enhanced metacognitive skills but also promoted academic motivation and orientation. This is consistent with the findings of (Arami et al., 2016), which indicated that

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students with higher levels of metacognitive skills performed better in academic planning. Similarly, the findings of (Dadvand, 2013) highlighted the mediating role of self-regulation between goal orientation and academic achievement, which was also observed in the present study as increased self-regulation led to improved skills in selecting academic paths.

Moreover, the analysis of the educational package's validity demonstrated that the designed components were well-aligned with the cognitive and emotional characteristics of lower secondary school students and resulted in increased academic and career self-confidence. In this regard, the study by (Moloudi et al., 2022) also confirmed a significant relationship between metacognitive beliefs and academic self-efficacy and showed that through self-directed learning, the effectiveness of educational processes can be enhanced.

Attention should also be given to international studies such as (Fergus et al., 2020) and (Huntley et al., 2022), which found that metacognitive beliefs—particularly in relation to intolerance of uncertainty and test anxiety—can influence students' academic decision-making. The findings of this research are notable in this respect, as the reinforcement of metacognitive beliefs led to reduced anxiety and ambiguity in the academic decision-making process and increased confidence in students' choices.

From an applied perspective, the study by (Sobhani Nejad, 2012) emphasized the importance of self-regulated learning strategies in academic performance, a conclusion supported by the current research through the presentation of a structured educational package focused on self-regulation and self-monitoring.

One of the most important limitations of this study was its focus on a sample consisting of teachers and students in lower secondary schools within a specific geographical region, which may limit the generalizability of the findings to other contextual or cultural settings. Additionally, relying on teachers' judgments to validate the package may have introduced subjective biases. Furthermore, the effectiveness of the package was assessed only in the short term, and no long-term evaluation was conducted.

It is recommended that future research examine the effectiveness of the designed educational package in other educational stages such as high school and university. Longitudinal analyses to investigate the lasting impact of the package on students' academic and career guidance outcomes could also yield valuable insights. Moreover, incorporating the perspectives of parents and school counselors may enhance the comprehensiveness of the content evaluation process.

It is advisable to integrate the designed educational package into the formal school curriculum to systematically and coherently support academic and career guidance processes. Additionally, training teachers to implement the package and enhance metacognitive skills can increase its overall effectiveness. Organizing educational workshops for school counselors and parents could also contribute to comprehensive support for students' educational pathways.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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