Academic Education Publishing House

Economic Society and Humanities Vol. 2 No. 3, 2025

Construction of an Evaluation System for Cultivating E-commerce Applied Talents from the Perspective of Intelligent Integration

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Abstract: Based on the theory of multiple intelligences, this study constructs an evaluation system for cultivating applied talents in e-commerce from nine dimensions: speech-language intelligence, logical-mathematical intelligence, interpersonal communication intelligence, body-movement intelligence, visual-spatial intelligence, music intelligence, introspective intelligence, natural observer intelligence, and innovative intelligence. A total of 46 indicators are selected, including clear expression, market analysis, team harmony, information communication, aesthetics and practicality, content attractiveness, skill evaluation, development direction, and model innovation. The weight of the indicators is quantitatively analyzed using the Analytic Hierarchy Process (AHP), and the total evaluation score is calculated by weighted summation. The results show that "logical-mathematical intelligence" occupies the highest weight (13.695%) in the cultivation of e-commerce talents, emphasizing the core role of logical reasoning and mathematical analysis. Additionally, the importance of "visual-spatial intelligence" (11.317%) and "innovative intelligence" (10.651%) is significant, highlighting the necessity of user interface design and innovative thinking. Furthermore, the weight values of interpersonal communication intelligence and introspective intelligence reveal the critical role of teamwork and self-management in e-commerce talent development.

Keywords: Theory of Multiple Intelligences; E-Commerce; Talent Cultivation; Evaluation Index System; AHP.

1. Introduction

According to the 14th Five-Year Plan for E-commerce Development, China needs to cultivate high-quality e-commerce talents to promote industrial growth. It is estimated that by 2025, the number of e-commerce practitioners will reach 70 million. The plan advocates building a talent training system integrating government, industry, academia, research, application, and training. Therefore, constructing an objective and rational evaluation index system for e-commerce applied talents is essential to address the mismatch between talent cultivation and job demands.

Current research on educational evaluation focuses on three directions: multi-dimensional content, diversified methods, and personalized standards. In the research of multi-dimensional evaluation content, Shang[1] proposed a multi-dimensional digital literacy and skill evaluation framework including knowledge, ability and values, which comprehensively covered the digital literacy requirements of talents in basic disciplines; Gong et al.[2] constructed a detailed evaluation system including 7 first-level indicators and 72 second-level indicators for e-commerce professionals, showing the multi-dimensional and meticulous evaluation content. In the research of diversified evaluation methods, Xie[3] established a multiple evaluation system of accounting talent training quality by using factor analysis method, which makes the evaluation process more scientific and accurate. Liu et al.[4] combines explanation structure model method and the analytic hierarchy process (AHP), constructed the O2O curriculum integration of the effect of classroom teaching evaluation system, the diversity of this approach for teaching effect evaluation provides a new perspective and tools. In the research of personalized evaluation standard, Ouyang[5] proposed the evaluation system of highly skilled talents with vocational ability as the orientation and work performance as the focus. This personalized evaluation standard is more in line with the growth and development needs of different professional talents. On the other hand, Yang[6] has built a set of evaluation index system for the professional ability of retail

talents. This personalized evaluation standard is helpful to more accurately evaluate and improve the professional ability of retail talents. At present, the education evaluation system is developing towards a more comprehensive, scientific and personalized direction, in order to better adapt to the growth needs of different disciplines, different majors and different talents. Recent studies in sports science further underscore the importance of self-regulation and adaptive skills in talent development, which parallel the needs of e-commerce education. For instance, Te Wierike et al.[7] highlighted the critical role of self-regulatory skills and ball control in basketball players, demonstrating how position-specific demands necessitate tailored skill development. Similarly, Elferink-Gemser and Hettinga[8] emphasized pacing and self-regulation as vital for endurance athletes, revealing that structured self-management enhances performance under dynamic conditions. These findings resonate with the introspective and body-movement intelligences in e-commerce talent cultivation, where self-discipline, time management, and adaptability are equally essential for navigating rapid industry changes.

This paper integrates the theory of multiple intelligences and the theory of system engineering, aims to build the evaluation index of e-commerce applied talents training, and uses the analytic hierarchy process to quantitatively analyze the relative importance of the evaluation index system, to ensure the objectivity and rationality of the weight of the evaluation index, and to improve the accuracy and reliability of the evaluation results.

2. Design of Evaluation Index System

This paper adopts Howard Gardner's multiple intelligences theory [9] as the theoretical framework, he believes that human intelligence is not only the traditional language and logical mathematical intelligence, but also includes music, space, body movement, interpersonal, introspection, natural observation and other forms, which provides a comprehensive perspective for understanding and evaluating various abilities required by e-commerce application talents. In terms of the application of e-commerce education, Hu [10] discusses the application of multiple intelligence theory in the teaching of e-commerce major in secondary vocational schools. She pointed out that teachers should change the traditional view of students, recognize the potential of students in different intelligent fields, and stimulate students' interest and potential through diversified teaching methods to promote their personalized development. Therefore, the goal of the application of multiple intelligences theory in e-commerce education is to cultivate applied talents with comprehensive skills.

Firstly, according to the theory of multiple intelligence. The comprehensive development of nine kinds of intelligence. Such as verb-linguistic intelligence, logic-mathematical intelligence and visual-spatial intelligence, which are required in the field of e-commerce, is determined, and they are used as the Goal Layer of the evaluation index system. Secondly, according to the system engineering theory, the intelligence of these Goal Layers is further refined into sub-goals of the system layer, and each sub-goal represents a specific aspect of the application of intelligence in e-commerce. Then, the sub-goals of the system layer are decomposed into the element layer and the index layer to form a hierarchical evaluation system, as shown in Table 1. Finally, a questionnaire survey is designed to evaluate the self-evaluation and actual performance of e-commerce students in each intelligent dimension, and to identify the advantages and disadvantages of students in each intelligent dimension. Then, according to the results of data analysis, the weight of each index is assigned through the analytic hierarchy process, and finally the targeted evaluation.

Table 1. Evaluation Index System of E-Commerce Application-Oriented Talents Training

First-level factors	Second-order factors	Tertiary factors	Layer of elements	Indicator layer
Speech-Language intelligence	Communication skills	Verbal expression	Articulate	Ability to express e-commerce related concepts and ideas clearly and fluently.
		Reading Comprehension	Quick comprehension	Quickly understand and analyze e-commerce industry reports and market analysis.
		Foreign language ability	Multilingual communication	Good command of English in international e-commerce communication.
		Application ability	Copywriting	Be able to engage your target audience when writing your e-commerce marketing copy.

			Negotiation skills	Be able to accurately grasp the needs and intentions of the other party in e-commerce negotiation.
Logical-Mathematical intelligence	Analytical ability	Data analysis	Market Analysis	Use data analysis tools to effectively analyze the market and user behavior.
		Statistical processing	Data trends	Conduct statistical processing and trend forecasting of e-commerce sales data.
		Problem solving	Operational issues	Solve complex problems encountered in e-commerce operation.
		User experience	Platform optimization	Optimize the product layout and user experience of e-commerce platform.
		Innovative model	Pattern innovation	Take inspiration from natural phenomena and innovate e-commerce models.
		Risk assessment	Project evaluation	Conduct risk assessment and decision analysis for e-commerce projects.
Interpersonal intelligence	Teamwork	Working relationships	Team harmony	Establish and maintain good working relationship in e-commerce team.
		Leadership motivation	Leadership	Demonstrate leadership and team motivation in e-commerce activities.
		Resource sharing	Spirit of cooperation	Be willing to share resources and assist others in e-commerce cooperation.
		Customer experience	Service quality	Provide superior customer experience in e-commerce services.
		Knowledge Sharing	Process narration	I like to tell others about the evolution of e-commerce.
Body-Movement intelligence	Practical manipulation	Body language	Communication of information	Use body language in your e-commerce presentation to communicate your message effectively.
		Body coordination	Agility	Stay physically agile and coordinated during e-commerce activities.
		Learn fast	Skill mastery	Learn and master new skills quickly in e-commerce practice.
		Body Posture	Service posture	Maintain elegant posture and posture in e-commerce service.
		Team work	Collaborative spirit	Demonstrate good team spirit in e-commerce activities.
Visual-spatial intelligence	Design ability	Interface design	Aesthetic and practical	Design an e-commerce website interface that is both beautiful and functional.
		Visual art	Presentation effects	Enhance the presentation of e-commerce products through visual arts.
		User focus	Visual focus	Accurately grasp the user's visual focus in e-commerce activities.
		Spatial layout	Merchandise layout	Use spatial perception to optimize the product layout of e-commerce platforms.
		Creative Marketing	Marketing plan	Design creative visual marketing programs for e-commerce campaigns.
Music Intelligence	Creative expression	Music apps	Content appeal	Enhance the appeal of e-commerce content through music and rhythm.
		Background music	Emotional expressions	Create or choose appropriate background music to enhance the emotional expression of the video or advertisement.
		User engagement	Interactive sessions	Use the rhythm and melody of music to design interactive links to increase user engagement.
		Personalize the experience	Music recommendations	Customize personalized music playlists based on your target audience's preferences.
		Engagement	Recommendation algorithm	Analyze users' reactions to music and optimize music recommendation algorithms.

Introspective intelligence	Self-management	Self-awareness	Skills assessment	Be able to accurately recognize their own e-commerce skills and knowledge level.
		Self-discipline	Emotion management	Maintain self-discipline and a positive attitude in the face of challenges.
		Time Management	Efficiency gains	Ability to manage time effectively to improve the efficiency of e-commerce work.
		Continuous learning	Updating knowledge	Ability to continuously learn new knowledge to adapt to the rapid changes in the e-commerce industry.
		Team conflict	Conflict resolution	Be able to identify and resolve team conflicts in e-commerce projects.
Natural Observer intelligence	Market Insights	Trend Forecast	Direction of development	Forecast the direction of the e-commerce industry by observing market trends.
		Survey Analysis	Scientific investigation	Use scientific survey methods to collect and analyze data in e-commerce projects
		Environmental impact	Natural phenomena	Identify and leverage the impact of natural phenomena or environmental changes on e-commerce.
		Inspiration for Innovation	Inspiration draw	Draw inspiration from the outside world to innovate e-commerce products and services.
		Information attention	Press policy	Like to know financial news and policy information related to e-commerce.
Innovative intelligence	Innovative practice	Suggestions for improvement	Model innovation	Make innovative suggestions to improve the existing e-commerce model.
		Entrepreneurship	Entrepreneurial practice	Demonstrate an entrepreneurial and risk-taking spirit in an e-commerce project.
		Knowledge integration	Information integration	Innovative integration of e-commerce basic knowledge and information.
		Business Opportunities	Opportunity discovery	Identify and capture new business opportunities in the field of e-commerce.
		Product Optimization	Continuous innovation	Continuous innovation and optimization of e-commerce products and services.

3. Application of the Analytic Hierarchy Process (AHP)

The analytic hierarchy process (AHP) was proposed in the early 1970s by American operations research scientist Professor Sati of the University of Pittsburgh. It overcomes the difficulty of empowering multiple factors at the same time and provides a simple and effective decision-making method for complex structural problems with multiple criteria and multiple objectives. It is a weight calculation method based on pairwise comparison and relative importance score. The advantage of AHP lies in its structured decision-making process, which allows to evaluate the relative importance of different intelligence indicators by means of pairwise comparison, thus reducing the influence of subjective judgment and improving the objectivity and accuracy of evaluation results.

This paper collects data related to e-commerce talent training through questionnaires and other related resources, and then constructs a pairwise comparison matrix, and uses the analytic hierarchy process to calculate the weight of each evaluation index (As shown in Table 2-Table 10). These weights can reflect the weights of each index layer within the nine intelligences and among the nine intelligences in the evaluation of cultivating e-commerce applied talents (As shown in Figure 1).

Table 2. Results of the Speech-Language Intelligence Hierarchy Analysis

Item	Eigenvectors	Weight values
I can clearly and fluently express e-commerce related concepts and ideas.	0.923	18.469%
I am proficient in English in international e-commerce communication.	0.929	18.571%
I have the ability to read e-commerce industry reports and white papers.	1.015	20.306%
I can appeal to the target audience when writing e-commerce marketing copy.	1.097	21.939%
I have the ability to accurately grasp the needs and intentions of the other party in e-commerce negotiations.	1.036	20.714%

Table 3. Results of the Logic-Mathematical Intelligence Hierarchy Analysis

Item	Eigenvectors	Weight values
I can predict the direction of the e-commerce industry by observing market trends.	1.063	21.262%
I am able to use scientific investigation methods to collect and analyze data in e-commerce projects.	0.941	18.826%
I am good at identifying and using the impact of natural phenomena or environmental changes on e-commerce.	0.958	19.158%
I am good at drawing inspiration from the outside world and innovating e-commerce products and services.	0.975	19.491%
Understand the financial news, policy and other information related to e-commerce.	1.063	21.262%

Table 4. Results of the Visual-Spatial Intelligence Hierarchy Analysis

Item	Eigenvectors	Weight values
I am good at designing both beautiful and practical e-commerce website interface.	0.976	19.522%
I can improve the display effect of e-commerce products through visual art.	1.046	20.916%
I am good at accurately grasping the visual focus of users in e-commerce activities.	1.016	20.319%
I can use spatial perception to optimize the layout of goods on e-commerce platforms.	1.026	20.518%
I am good at designing creative visual marketing programs for e-commerce activities.	0.936	18.725%

Table 5. Results of the Music Intelligence Analysis Hierarchy

Item	Vector of features	Weight values
I am good at enhancing the appeal of e-commerce content through music and rhythm.	1.018	20.365%
I am able to create or select suitable background music to enhance the emotional expression of e-commerce videos or advertisements.	0.963	19.250%
I can use music rhythm and melody to design interactive links in e-commerce activities and increase user engagement.	1.013	20.263%
I can customize personalized music playlists for e-commerce platforms based on the preferences of the target audience to enhance user experience.	0.998	19.959%
I can optimize the music recommendation algorithm of e-commerce platform to enhance user engagement by analyzing users' reactions to music.	1.008	20.162%

Table 6. Results of the Human Communication Intelligence Analysis Hierarchy

Item	Eigenvectors	Weight values
I am able to establish and maintain good working relationships in the e-commerce team.	1.035	20.704%
I like to demonstrate leadership and team motivation in e-commerce activities.	1.030	20.600%
I take the initiative to share resources and assist others in e-commerce cooperation.	1.056	21.118%
You can provide excellent customer experience in e-commerce services.	0.864	17.288%
I like to tell others about the evolution of e-commerce.	1.014	20.290%

Table 7. Results of the Body-Movement Intelligence Analysis Hierarchy

Item	Eigenvectors	Weight values
I am able to communicate effectively using body language in an e-commerce presentation.	0.923	18.462%
I am good at keeping my body agile and coordinated in e-commerce activities.	0.962	19.231%
I am good at quickly learning and mastering new skills in e-commerce practice.	0.989	19.780%
I am good at maintaining elegant posture and attitude in e-commerce service.	1.071	21.429%
I have the teamwork spirit required in e-commerce activities.	1.055	21.099%

Table 8. Results of the Introspective Intelligence Analysis Hierarchy

Item	Eigenvectors	Weight values
I am good at identifying and resolving team conflicts in e-commerce projects.	1.055	21.102%
I have the ability to accurately recognize my own e-commerce skills and knowledge level.	0.982	19.647%
I have the ability to maintain self-discipline and a positive attitude in the face of challenges.	0.982	19.647%
I like to manage time to improve the efficiency of e-commerce work.	0.988	19.751%
I can keep learning new knowledge to adapt to the rapid changes in the e-commerce industry	0.993	19.854%

Table 9. Results of the Natural-Observer Intelligence Analysis Hierarchy

Item	Eigenvectors	Weight values
I can predict the direction of the e-commerce industry by looking at the market trends.	1.063	21.262%
I am able to use scientific investigation methods to collect and analyze data in e-commerce projects.	0.941	18.826%
I am good at identifying and using the impact of natural phenomena or environmental changes on e-commerce.	0.958	19.158%

I am good at drawing inspiration from the outside world and innovating e-commerce products and services.	0.975	19.491%
Do you like to learn financial news, policy and other information related to e-commerce?	1.063	21.262%

Table 10. Innovative Intelligence Analytic Hierarchy Process Results

Item	Eigenvectors	Weight values
I am able to propose innovative improvements to the existing e-commerce model.	0.974	19.471%
I am able to show entrepreneurial and adventurous spirit in e-commerce projects.	0.974	19.471%
I like to be able to creatively integrate basic e-commerce knowledge and information.	1.005	20.106%
I am able to identify and seize new business opportunities in the field of e-commerce.	1.021	20.423%
I can continuously innovate and optimize e-commerce products and services.	1.026	20.529%

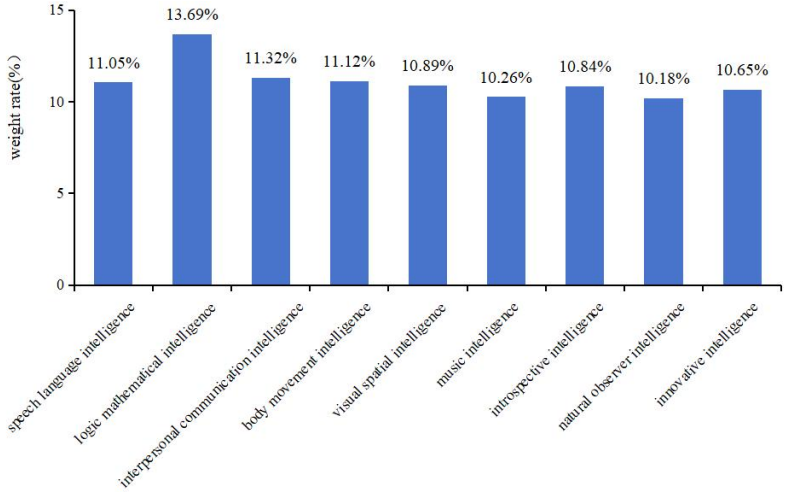

Figure 1. Inter-level Analysis Results of Nine Intelligences

Firstly, by applying AHP analytic hierarchy process to conduct in-depth weight analysis on the training evaluation index system of e-commerce application talents, through analyzing the internal weight of each intelligence, it is found that in the intelligence of "speech-language intelligence", the ability to write e-commerce marketing copy ranks first with a weight value of 1.097. Highlights the effective communication and marketing strategy is of crucial importance in the field of electronic commerce. In addition, the internal analysis of "Logic-Mathematical intelligence" shows that the ability to predict the direction of the e-commerce industry is considered critical with a weight value of 1.063, which emphasizes the central role of analytical ability, data interpretation in e-commerce.

Secondly, according to the weight comparison between different intelligences. "Logic-mathematical intelligence" occupies the highest position among all intelligences with a weight ratio of 13.695%. This result reveals the extreme importance of logical reasoning and mathematical analysis ability in the complex decision-making process of e-commerce. At the same time, the "visual and spatial intelligence" and "innovative intelligence" innovation of weight value, 11.317% and 10.651%, respectively, showed that in user interface design and the cultivation of innovative thinking, educators should pay equal attention to.

Thirdly, the weight value of "interpersonal intelligence" shows the role of teamwork and communication skills in the success of e-commerce projects, while the weight value of "introversive intelligence" reflects the importance of personal self-awareness and time management to adapt to the rapid changes in the e-commerce industry. In addition, the weight of "innovative intelligence" natural observer value emphasized the importance of sensitivity to market trends, to adapt to the environment of e-commerce industry and fast response is very important. Finally, although "body-motor intelligence" may not be the most intuitive skill in traditional e-commerce activities, its weight values in the evaluation system suggest that effective body language and coordination are equally indispensable in practices such as product presentations or customer service. Together, these analysis results form a multi-dimensional evaluation index system for the training of applied talents in e-commerce, which provides a comprehensive perspective for educators to optimize and design training programs to meet the various needs of the development of e-commerce industry.

This paper aims to evaluate the multi-dimensional

evaluation index scoring scale of individual comprehensive intelligence in the field of e-commerce, which covers nine different intelligence domains, including verbal intelligence, logic-mathematical intelligence, visual-spatial intelligence, musical intelligence, interpersonal intelligence, body-movement intelligence, introspective intelligence, natural observer intelligence and innovative intelligence.

The analytic hierarchy process (AHP) is used to assign different weights to each of the nine kinds of intelligence, as well as the weight of the internal index layer of each intelligence, so as to ensure the balance and comprehensiveness of the evaluation process, and reflect its importance in the training of applied talents in e-commerce. Evaluation method to calculate the total score with the method of the weighted sum, of each index in the field of intelligent total score multiplied by the weight of its corresponding percentage, then the weighted scores to get the final evaluation scores. The formula is as follows:

$$\begin{aligned}\text{Total evaluation score} = &\sum_{i=1}^{n\text{（speech language intelligence）}} \times 0.110 + \sum_{i=1}^{n\text{(logic mathematical intelligence）}} \times 0.137 \\ &+ \sum_{i=1}^{n\text{(interpersonal communication intelligence)}} \times 0.113 + \sum_{i=1}^{n\text{(body movement intelligence）}} \times 0.111 \\ &+ \sum_{i=1}^{n\text{(visual spatial intelligence)}} \times 0.109 + \sum_{i=1}^{n\text{(music intelligence)}} \times 21\%\text{）} \times 0.103 \\ &+ \sum_{i=1}^{n\text{(introspective intelligence)}} \times 0.108 + \sum_{i=1}^{n\text{(natural observer intelligence)}} \times 0.102 \\ &+ \sum_{i=1}^{n\text{(innovative intelligence)}} \times 0.107\end{aligned} \quad (1)$$

Where n(speech-language intelligence) to n (innovation intelligence) represent the number of indicators in each intelligence domain respectively. The scores from i to i represent the score of the i-th indicator in each intelligence domain. 0.110 to 0.107 are the weights of each intelligence domain in the total score of the evaluation

Through scientific methodology, this paper provides a systematic evaluation framework for the training of e-commerce application-oriented talents, and provides an empirical basis for education practitioners in training e-commerce talents with comprehensive ability. These findings are helpful to cultivate innovative talents who can adapt to and promote the development of e-commerce industry.

4. Conclusion

This study constructed a comprehensive evaluation system for cultivating e-commerce applied talents based on the theory of multiple intelligences, employing the Analytic Hierarchy Process (AHP) to quantify the weights of nine key intelligences. The results highlight the dominant role of logical-mathematical intelligence (13.695%), emphasizing the critical need for analytical and data-driven skills in e-commerce. Visual-spatial intelligence (11.317%) and innovative intelligence (10.651%) also emerged as pivotal, underscoring the importance of user-centric design and creative problem-solving. Additionally, interpersonal and introspective intelligences revealed the significance of teamwork and self-management in adapting to the dynamic e-commerce landscape.

Acknowledgment

This study is supported by Graduate Education Research and Reform Program of Beijing Union University (Reform of "Course of Vocational and Technical Education Measurement and Evaluation "guided by cultivating the teaching ability of secondary vocational school teachers, No. JY2024Y002)

References

[1] Shang J W. Research on evaluation index system of digital literacy and skills of basic disciplines talents under the background of digital transformation. Journal of Higher Education, 2023, 9(16): 9-12.

[2] Gong Y T, Liu X P, Tang W. Research on the evaluation index of the training of e-commerce majors in Secondary vocational College: A case study of Yulin Normal University. Quality Education in Western China, 2018, 4(21): 15-17.

[3] Xie Y Q. Research on Multiple Evaluation of accounting talent Training Quality in Higher Vocational Colleges. Proceedings of the 9th Essay Academic Symposium in 2015, 2014: 2.

[4] Liu H B, Yu G E. Research on the evaluation index system of O2O Curriculum Integration Classroom Teaching effect Based on the goal of innovative talent training. Journal of Zhejiang Sci-Tech University (Social Sciences), 2023, 50(05): 624-630.

[5] Ouyang D. Discussion on the construction path of vocational ability evaluation index system of highly skilled talents in the new

Era. International Public Relations, 2021(07): 45-46.
[6] Yang L X. Research on Vocational Ability evaluation index system of applied talents in colleges and universities: Taking retail talents as an example. Journal of Anshun University, 2018, 20(01): 77-81.
[7] Maria C S W T, Helena C B H, Laura J, et al. The importance and development of ball control and (self-reported) self-regulatory skills in basketball players for different positions. . Journal of sports sciences, 2018, 36 (6): 710-716.
[8] T M E, J F H. Pacing and Self-regulation: Important Skills for Talent Development in Endurance Sports. . International journal of sports physiology and performance, 2017, 12 (6): 831-835.
[9] Howard G, Shen Z L. Three Important Pedagogical Inferences based on multiple intelligence-based theory. New Curriculum Teaching (Electronic Edition), 2014(06): 122-124.
[10] Hu X L. The Application of Multiple intelligences Theory in the teaching of E-commerce specialty in secondary vocational schools. Occupation, 2019(20): 82-83.