

A 2.4 – ROMANIA



Identification of training needs for integrating AI chatbots in VET



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1. INTRODUCTION

In recent years, the intersection of technology and fashion has given rise to a wave of transformative innovations. Among these, Artificial Intelligence (AI) has emerged as a cornerstone in reshaping the landscape of the fashion industry. Within the realm of Vocational Education and Training (VET) in Romania, the integration and comprehension of AI tools, particularly AI chatbots, present a captivating and potentially transformative avenue.

Romania, with its rich cultural heritage and burgeoning creative industries, has begun to navigate the integration of AI in various sectors, including fashion. This endeavor is fueled by a collective interest to propel the nation's fashion industry into a future characterized by efficiency, creativity, and competitiveness on the global stage.

Within this context, this report embarks on an exploration of the level of readiness and understanding among students and teachers in the VET fashion education field in Romania, pertaining to the utilization of AI tools, with a special emphasis on AI chatbots.

Our knowledge of Romania's specific progress in this domain is limited, but our enthusiasm for uncovering insights is high. Through a series of in-depth interviews with key stakeholders in the Romanian VET fashion education sector, we seek to gain valuable perspectives that shed light on the current state of AI adoption. Their experiences and viewpoints will serve as vital indicators of the readiness of Romania's VET sector to embrace AI technologies and provide crucial guidance for its future integration.

As we embark on this journey of inquiry, we recognize the potential significance of our findings for the Romanian fashion industry, educational institutions, and the broader global discourse on the symbiotic relationship between technology and creativity.



1. METHODOLOGY

The methodology involves analyzing and comparing the findings from interviews conducted with students and teachers. The interviewees belong to two different target groups, allowing for a comprehensive understanding of the topic from both perspectives.

The questions were elaborated and defined jointly by the project partners, asking to the interviewees to follow the form where the data disclosed below has been gathered.

Interviews Finding Collection:

The table you can find in the last part of this paper presents the collected responses from the interviews, categorized based on the type of question and the role of the interviewee (student or teacher). Each question is accompanied by the associated text, which contains the specific answers or insights provided by the interviewees.

By systematically organizing the interview findings in tables, the aim is to facilitate the analysis and comparison of the responses, enabling a comprehensive exploration of the use of AI in the fashion industry within each country.

A pre-set form through Google Forms was used to record respondents' answers. The structure of the interview contains 23 questions divided into 3 groups/clusters: "Role and Background" (3 questions), "School and Technological Context" (7 questions) and "Industry and AI" (13 questions). The scope of the interviews is to identify how digital technologies and AI are currently being used by fashion design VET schools nowadays.

2. ROLES AND BACKGROUND

The 6 students we interviewed were coming from different backgrounds and in different school types - from University courses to small online VET courses. Some of the institutions reached include West University of Timisoara, Salomeia Truta Fashion Institute and BiEco digital fashion school students. They are also at different levels of experience, being Bachelor's first years of finishing their Master's, as well as beginners at VET courses to advanced ones.

The remaining 9 teachers are of the same diverse backgrounds - having replies from University teachers, to teachers who run their independent courses. Their skill and knowledge level regarding digital technologies is varied based on their backgrounds. Among the institutions reached, we have the West University of Timisoara, Gheorghe Asachi University in Iasi, and the owner of BiEco independent digital fashion school.



3. SCHOOL AND TECHNOLOGICAL CONTEXT

3.1. Use of digital technologies

Student perspective

In the surveyed VET fashion education field in Romania, 80% of schools are situated in large urban regions, with the remaining 20% in medium-sized urban areas. This distribution sheds light on the concentration of educational institutions across the country.

Regarding familiarity with digital technologies, responses varied among participants. Some expressed a high level of proficiency, demonstrating expertise in applications like Illustrator, 3D modeling software, 3D printing technology, and AR/VR experiences. Conversely, some participants indicated limited familiarity or even a lack of exposure to these tools.

This diverse range of technological proficiency underscores the breadth of experiences within the VET fashion education sector in Romania. It also highlights the potential for growth and development in this area, emphasizing opportunities for further integration of digital tools and resources to enhance education and foster innovation within the field.

Responses regarding technological equipment and staying current with the times in the surveyed VET fashion education sector in Romania revealed a varied landscape.

Some participants acknowledged their institutions have technology available, but admitted it might not be the most cutting-edge. Another participant provided a detailed account of the resources at their disposal, including a computer room with various programs, a screen printing station, and sewing machines, while also expressing a desire for more advanced machinery.

In contrast, one respondent described their school as moderately technologically equipped. They mentioned access to computers and specialized software, but indicated room for improvement with the potential for more advanced tools.

Meanwhile, specific institutions were highlighted for their approaches to technology integration. BiEco Fashion, an online vocational school, was lauded for its robust digital resource base, particularly its focus on CLO3D as a virtual prototyping tool, showcasing a dedication to modern technologies in fashion education. DallesGO was commended for its emphasis on incorporating modern technology into the curriculum, boasting up-to-date software and hardware for fashion design. The West University in Timisoara was recognized for its gradual adoption of digital technologies, offering optional CLO3D classes, though maintaining a predominant focus on traditional techniques.



Collectively, these responses indicate a spectrum of technological preparedness across the surveyed institutions. While some have made significant strides in adopting modern technologies, others see potential for further advancements in their equipment and resources. This diversity reflects the evolving landscape of technological integration within the VET fashion education sector in Romania.

Teacher perspective

The respondents demonstrated varying levels of familiarity with digital technologies in their respective fields. One respondent expressed strong familiarity with a broad range of modern technologies, including sustainable fabrics, production methods, and cutting-edge programs like Clo3D and artificial intelligence. Another indicated a moderate level of familiarity, while a third respondent admitted to being less familiar with these technologies. Overall, the respondents exhibited a spectrum of proficiency in the application of digital technologies. The respondents provided varied insights into the technological equipment levels at their respective schools and their perceived alignment with current times.

Some mentioned that their schools have basic technological setups, including a computer lab for teaching computer usage. Another emphasized that their school is adequately equipped according to accreditation requirements and standards for professional training. However, financial constraints were noted as a limiting factor for acquiring state-of-the-art software and equipment. Despite potential access to European funding, spatial constraints hinder the establishment of additional laboratories.

In terms of technology in the classroom, one respondent mentioned having access to computers and the internet, while another highlighted that their school is well-equipped technologically, but the workshop lacks modern machinery. Additionally, an online-exclusive course is believed to be at a high level and in sync with contemporary technological trends.

Regarding the technologies implemented in their respective schools, Some mentioned the use of basic digital technologies, with a focus on online classes. Others outlined a more comprehensive set of technologies, including various types of sewing machines, software for design and editing, CAD systems for textile production, and collaboration platforms like Microsoft Teams and Google Meet. Overall, the technologies mentioned encompass a wide spectrum, from fundamental digital tools to specialized equipment and software tailored to the needs of specific vocational training areas.



3.2. Benefits And Advantages of Using Digital Technologies

Student perspective

Respondents provided a range of perspectives on the reasons and benefits of implementing digital technologies in fashion education. These included the ability to translate artistic concepts into reality, streamline design processes for greater efficiency, bridge traditional craftsmanship with modern methods, prepare for industry evolution, create intricate and precise designs, enhance visualization capabilities, and better meet the demands of the dynamic fashion market. Overall, the consensus was that integrating digital tools is essential for equipping students with the skills and knowledge needed to succeed in the rapidly evolving fashion industry.

Teacher perspective

Respondents highlighted various reasons and benefits for implementing digital technologies in education and vocational training:

These included:

- Simplification of processes
- Preparation of students for current technologies, enhancing their employability
- Facilitated integration of graduates into the job market, leading to significant economic progress through a skilled workforce
- Assurance of precision, efficiency, competitiveness, and creativity in work
- Improved student relations, particularly important in the context of the pandemic
- Acknowledgement that the digitization of education is an integral part of progress and facilitates the smooth implementation of new technologies

In addition, respondents noted that the implementation of such technologies provides large-scale access to quality educational content, streamlines production processes by eliminating the need for physical samples, and reduces waste, time, and materials used in design and production. One respondent expressed a lack of familiarity with the subject matter, indicating a desire to learn more.

3.3. Level of Readiness & Flexibility

Student perspective:

The responses indicate a range of digital preparedness among teachers in the fashion education sector. Some teachers have strong digital skills and incorporate digital sketching into their teaching methods. However, there's room for improvement in the overall digital proficiency of instructors. At BiEco Fashion, instructors are well-prepared in the digital field, particularly in teaching CLO3D and AI applications. Similarly, at



DallesGO, instructors demonstrate high proficiency in relevant digital technologies for fashion design, providing comprehensive training for students. Additional training and resources in digital technologies would better equip instructors to guide students effectively.

VET curricula's flexibility in introducing and using cutting-edge technologies varies across institutions. While some believe there's potential for more adaptability, others see efforts being made to incorporate modern tools like Clo3D. At BiEco Fashion and DallesGO, there is a strong emphasis on integrating cutting-edge technologies, ensuring students are well-prepared for the dynamic fashion industry. However, some note that at the university level, there may be a need for more flexibility, as the current emphasis on theory outweighs practical application.

All 6 students believe that technology and digitalisation is the future of the industry.

Teacher perspective:

The flexibility of VET programs in introducing and utilizing cutting-edge technologies varies among respondents. Some find school programs to be overly bureaucratic, potentially hindering adaptability. Others believe VET programs are regularly updated, allowing for the incorporation of the latest technologies. Art and design faculties often focus on practical, vocational development, with VET programs viewed as potentially valuable for introducing modules that simulate real-world professional situations. Some respondents indicate a lack of information on this topic. A few are uncertain or lack specific knowledge about the flexibility of VET programs in this regard. Overall, opinions on the flexibility of VET programs in integrating cutting-edge technologies are diverse, with some perceiving room for improvement and others recognizing ongoing efforts to stay updated.

All 9 teachers believe that technology and digitalisation is the future of the industry.



4. INDUSTRY & AI

4.1. Familiarity with AI Learning Tools

Some institutions are gradually introducing new technologies, taking a measured approach. They aim to adapt to the evolving market by incorporating modern tools and methods over time. Others prioritize learning and staying updated on new skills, and then impart this knowledge through courses and assignments. However, there may be some reservation about extensive use of AI in assignments and designs.

As for the teachers, they believe that there are limitations in educational opportunities within their current context. Others mentioned efforts in legislative and methodological frameworks, including updates to standards and curriculum development, as well as informative campaigns targeting students, teachers, and parents. One respondent indicated a lack of specific information on how VET education is being implemented in Romania to address the new market demand. Additionally, there was an emphasis on VET education's role in preparing students for a digital market. Some respondents expressed uncertainty or a lack of detailed information on this topic. Another response emphasized the facilitation of graduates' integration into the job market.

Regarding the question about VET education meeting the new market demand, responses indicated that for the moment, not much may be happening. A respondent expressed a lack of knowledge on the subject. Another highlighted that certain courses within VET education are tailored for industry professionals seeking to enhance their technological skills, complementing the more traditional education offered by universities.

Regarding the familiarity with AI tools, there is a clear discrepancy between the level of knowledge the students and teachers have. While a majority of 80% of students were familiar with AI tools, only 33% of the teachers were familiar with them. The students have heard of the existence of technologies like ChatGPT, Midjourney AI forecasting and AI assisted design, Bard and AI fitting rooms, while teachers have indicated familiarity with tools like AI translations, AI image analysis, Midjourney, AI-powered computer vision systems for textile inspection.

As for the level of implementation of AI in courses, it is quite low: only 2 teachers use AI in their courses, and only 2 students. They mostly use technologies like ChatGPT, and Midjourney, or AI tools for translations and image search. Only one teacher stated that they work with a company that uses AI tools, namely the Technical University in Iasi, that works with the Romanian brand Katty Fashion.



4.2. AI in the Learning Process

Students hold diverse views on the potential impact of integrating AI into their learning process. Some anticipate significant time-saving benefits and improved access to information, albeit with concerns about overreliance. Others see AI as a swift and efficient research tool. Some emphasize the importance of traditional craftsmanship in their curriculum, suggesting AI may not be immediately relevant. Yet, many acknowledge the potential of AI tools in areas like prototyping and trend analysis, envisioning a more informed and streamlined approach to fashion education. Additionally, participants recognize the value of AI-powered chatbots as instant, tireless study aids, offering quick answers and support.

4.3. Eco-Standards in schools

Participants envision several potential positive outcomes of employing sustainable technologies in the fashion sector:

- Increased process efficiency, reduced material wastage, and enhanced predictability in consumer preferences are expected benefits.
- Some express a visionary and optimistic outlook, foreseeing a future dominated by such technologies, at least for a certain period, until new advancements emerge.
- Others affirmatively acknowledge the potential advantages, particularly in terms of time-saving in creating diverse collections and experimenting with virtual models.
- However, a few respondents indicate they haven't contemplated these potential benefits extensively.

Regarding sustainable outcomes from a technological standpoint:

- Intelligent systems are seen as enabling precise control over processes, potentially leading to reduced energy and water consumption. For instance, automating quality control and defect detection can minimize the production of defective textiles, thus reducing material wastage.
- One participant expresses frequent consideration of these potential positive outcomes.
- Another affirms that teaching Clo3d, a 3D virtual prototyping software, is motivated by the desire to contribute to sustainable practices in the fashion industry.



70% of teachers indicate that eco-standards are applied in schools through the forms of recycling and reuse, creating new products from waste and upcycling. 80% of students also agree with the same practices. Additionally, they also mentioned having a donation box where they can reuse material scraps of old products from other students, as well as some strictly using digital mediums for their creation, to avoid producing any waste. All students use recycled or eco-friendly fabrics in their work.

Teachers have mentioned the fact that they encourage students to always reuse or use recycled materials in their work, especially in practical ateliers. They teach students how to upcycle and reuse fabric and old clothing, and we assist them in creating designs based on recycling and upcycling principles.

Only one teacher is working with companies that employ green fashion practices, namely the brands Katty Fashion and Redu. At the West University, students do practical work in ateliers of designers of their choice, so some choose to work under sustainable designers.



5. CONCLUSIONS - OVERALL OPINION ON AI USE

This report embarks on a comprehensive exploration of the readiness and understanding of students and teachers in Romania's Vocational Education and Training (VET) fashion sector regarding AI tools, with a special focus on AI chatbots. Through in-depth interviews, we aim to illuminate the current state of AI adoption and provide crucial insights for its future integration.

The study encompasses diverse backgrounds and experience levels, spanning from university courses to online VET programs, reflecting a spectrum of proficiency in digital technologies among both students and teachers. The findings highlight a range of technological preparedness across institutions, indicating opportunities for growth and development.

The report reveals varying degrees of familiarity with digital technologies among students, ranging from high proficiency to limited exposure. This underscores the need for further integration of digital tools to enhance education and foster innovation within the field. The survey also sheds light on the technological landscape within the VET fashion education sector in Romania, with some institutions showcasing robust digital resources, while others express a desire for more advanced equipment.

Furthermore, respondents emphasize the importance of integrating digital technologies in fashion education, citing benefits such as enhanced efficiency, precise design capabilities, and better preparation for the evolving fashion market. Teachers echo this sentiment, highlighting the simplification of processes, improved student relations, and the pivotal role of digitalization in education.

Regarding the integration of cutting-edge technologies, opinions vary, with some recognizing ongoing efforts to incorporate modern tools like Clo3D, while others perceive potential for further adaptability. The report also unveils a notable difference in familiarity with AI tools between students and teachers, underscoring the need for comprehensive training programs.

In conclusion, this report provides valuable insights into the current state of AI adoption in Romania's VET fashion education sector. It highlights the potential for further integration of digital technologies to enhance education and prepare students for a dynamic and competitive fashion industry. The findings offer vital guidance for institutions, educators, and policymakers as they navigate the evolving landscape of technology and creativity in fashion education.



ANNEX 1 – TEACHER INTERVIEW CODING

Document for Teachers (T):

Reporting & Coding Methodology for A2.4 National Reports - Teachers (T)

Cluster 1: Role and Background

Q and T	Question	Associated Text
1	I am a teacher	
		Professor at Vladen Technological High School Education in the field of textile and leather industry Fashion design University professor Aesthetics and Hygiene
T	Field of expertise (e.g., fashion, technical, commercial, etc.)	Patternmaking Brand owner
Q.3 T	Years of teaching experience	12 to 40

Cluster 2: School and Technological Context

Q and T	Question	Associated Text
Q.4 T	School location (e.g., small, medium, big region)	8 from big region, 1 from small region
Q.5 T	Digital technologies you are familiar with (field of expertise)	Midjourney, clo3d
Q.6/7 T	Digital solutions your school is equipped with (and how they are being used)	Computer room, technical sewing equipment, TV, projector, metalotechnique sewing machines, clo3d, fully automated sewing lab, CAD for textile confections, industrial sewing machines, Gemini, Pattern Plotter, overlock machines, Adobe
Q.8	Benefits/Advantages of digital technologies use	Large access to quality educational content, eliminating the need for physical samples, reducing waste, time spent, materials used, getting students ready for the industry of today, efficiency, creativity and competitiveness, better student-teacher relationships, better job opportunities for students



Q and T	Question	Associated Text
Q.9/10 T	Level of preparation in introducing/using digital technologies	medium

Cluster 3: Industry and AI

Q and T	Question	Associated Text
Q.11	To what extent fashion industry requires digitized (VET) professionals	/
Q.12/13/15/16/18	Familiarity with AI learning tools (i.e., chatbot) and use of them in school courses	Somewhat familiar, but not used in schools yet, only in independent courses
Q.14	Support of AI in learning process (teacher's perspective)	/
Q.20	Positive outcomes of AI use in fashion industry	Better products, less waste, efficiency
Q.21/22/23	Familiarity and experience with eco standards	High
-	Overall opinion on AI use	Unfamiliar but interested

ANNEX 2 – STUDENT INTERVIEW CODING

Document for Students (S):

Reporting & Coding Methodology for A2.4 National Reports - Students (S)

Cluster 1: Role and Background

Q and S	Question	Associated Text
1	I am a student	/
S	Field of study (e.g., fashion, technical, commercial, etc.)	Fashion design, digital fashion design
Q.3 S	Academic/scholastic year	2 nd & 3 rd year bachelors, 1 st year masters, beginner and advanced courses



Cluster 2: School and Technological Context

Q and S	Question	Associated Text
Q.4 S	School location (e.g., small, medium, big region)	5 in big region, 1 in medium region
Q.5 S	Digital technologies you are familiar with (field of study)	Clo3d, adobe, midjourney
Q.6/7 S	Digital solutions your school is equipped with	computer room with different programs installed (adobe, clo3d), and a screen printing station, an atelier with some home and industrial sewing machines, a buttonhole maker, and another room with regular sewing machines
Q.8 S	Benefits/Advantages of digital technologies use	Technology aids in pattern-making and visualization, Clo3d for efficient product visualization without material waste, Bridging traditional craftsmanship and modern design, enhance efficiency, precision, and creativity
Q.9/10 S	Level of preparation in introducing/using digital technologies	Somewhat skilled teachers, somewhat open and flexible to introducing technologies. It is still in the very beginning phase and the curriculum is beginning to adapt

Cluster 3: Industry and AI

Q and S	Question	Associated Text
Q.11	To what extent fashion industry requires digitized (VET) professionals	Some teachers have good skills, but others lack them
Q.12/13/15/16/17/18	Familiarity with AI learning tools (i.e., chatbot) and use of them in school courses	Students are familiars, few are using it
Q.14	Support of AI in learning process (student's perspective)	significant time-saving benefits and improved access to information, swift and efficient research tool, prototyping and trend analysis, envisioning a more informed and streamlined approach to fashion education
Q.20	Positive outcomes of AI use in fashion industry	ability to translate artistic concepts into reality, streamline design processes for greater efficiency, bridge traditional craftsmanship with modern methods, prepare for industry evolution, create intricate and precise designs, enhance visualization capabilities, and better



Q and S	Question	Associated Text
		meet the demands of the dynamic fashion market
Q.21/22/23	Familiarity and experience with eco standards	high
-	Overall opinion on AI use	Good