# Curriculum Design Using the Holland Theory of Vocational Interests

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| Abstract | |
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| *Keywords:*<br>vocational interests, Curriculum design, RIASEC model, personalized learning, educational inclusivity | The article explores the application of Holland's Theory of Vocational Interests in designing pre-university curricula, emphasizing personalized and relevant educational experiences. The curriculum is conceptualized as a structured "plan for learning," requiring balance and coherence across levels: international, national, school-specific, classroom, and individual. It highlights the significance of integrating students' vocational profiles (RIASEC) into teaching strategies to foster engagement, motivation, and skill development. The study outlines a multi-step approach, including profiling students' vocational interests, analyzing interest types, and creatively designing learning situations aligned with these profiles. Case studies from Romanian pilot programs illustrate the effectiveness of this model, highlighting adaptations for frontal, group, and individual teaching formats. The approach facilitates the development of career-relevant skills and enhances educational inclusivity. Ultimately, the implementation of Holland's theory contributes to a dynamic learning environments, better decision-making for students' academic and career paths, and the preparation of active, competent citizens for a rapidly evolving society. |

## 1. Introduction

Curricular design represents the process of planning, organizing, and developing educational content to address students' learning needs and societal demands. It includes selecting learning objectives, structuring content, choosing teaching strategies, and evaluation methods, with the aim of creating a coherent and flexible framework for the educational process. Moreover, the process of curricular design involves successive stages, such as analyzing the educational context in which it takes place, considering students' needs, examining educational standards, and addressing labor market requirements. This is followed by defining educational objectives, selecting content, and organizing it into a logical structure, in alignment with the principles of progressivity and interconnectedness. The final stages involve selecting teaching and assessment methods that facilitate the achievement of the established objectives.

A well-designed curriculum brings numerous benefits. First, it contributes to improving the quality of education through more efficient organization of the learning process. Additionally, students benefit from a learner-centered approach that stimulates critical thinking and creativity. Second, it facilitates the adaptation of education to the demands of contemporary society, preparing students for future challenges (Zajda, 2024). Furthermore, a flexible curricular design allows the integration of new technologies and adaptation to the rapid changes in the educational field. We consider that curricular design is not merely a tool for organizing education but also a strategic process through which schools can be transformed into relevant and inclusive learning environments, equipping students for a constantly evolving society.

The way in which a curriculum for pre-university education is designed depends on the designers' pedagogical conceptions of how students learn and social responsibility, the role of the foundations of knowledge, professional values and the development of educational services (Grant, 2010).

In the educational context, since learning occupies a central position, the term curriculum will be approached with the meaning of a trajectory or a "plan for learning" (Taba, 1962). This approach cuts to the essence of all other definitions, allowing adaptations for multiple educational levels, diversified contexts and specific representations. In order to clarify the perspective referred to, contextual particularization is always necessary in discussions on this topic.

Building on this, a differentiation between the different levels of curriculum has proven to be very useful in discussions about curricular activities

(educational policy, design and development, evaluation and implementation). Thus we have:

- International or supra-level

- System/society/nation/state or macro level (e.g. national programs or general objectives)

- School/institution or meso level, e.g. school specific curriculum

- Classroom or micro level, e.g. textbooks, teaching materials

- Individual/personal or nano level.

The supra-level refers to international debates or agreements on the aims and quality of education, based on the analysis of information from the results of international comparative studies (e.g. PISA or TIMSS), and curriculum development at this level is usually of a 'generic' nature, whereas specific approaches are more applicable to the mezzo and micro levels. Furthermore, the curriculum development process can take place in a narrow context (the development of a specific curriculum product), or a broad context (a long-term, continuous process of curriculum improvement, including aspects of educational change).

## 2. Theoretical foundation

To address issues related to curriculum decision-making and implementation, a broader perspective on the curriculum development process is often necessary. This process is usually complex, long-term and cyclical, involving many actors and participants. In it, the reasons and needs for change are identified, ideas are concretized into programs and materials, and efforts are directed towards the actual implementation of the desired changes in practice (Plomp, 2013).

The curriculum development process should ask the question what is the purpose of the educational program, how will the program be organized, what experiences will promote those purposes, and how can we determine if the purposes are being achieved? (O neill, 2015)

In educational reality, curricula can be represented in various forms, knowledge of which is mandatory when trying to understand curriculum change efforts. One proposed denomination of the three levels of curriculum is the 'intended', 'implemented' and 'realized' curriculum (van den Akker, 2003).

We believe that the main challenge in curriculum improvement is to create balance and coherence among the multiple components of a curriculum,

components that include three major planning elements: content, purpose, and learning organization. However, the difficulties encountered in curriculum design and implementation have indicated the need to pay more attention to a more elaborate list of components. These components, 10 in number, consist of specific questions related to the planning of student learning (Van den Akker et al., 2003).

- Rationale or Vision / *Why are they learning?*

- Aims & Objectves / *Toward which goals are they learning?*

- Content / *What are they learning?*

- Learning activities / *How are they learning?*

- Teacher role / *How is the teacher facilitating learning?*

- Materials & Resources / *With what are they learning?*

- Grouping / *With whom are they learning?*

- Location / *Where are they learning?*

- Time / *When are they learning?*

- Assessment / *How to measure how far learning has progressed?*

Interest is a powerful motivational factor that stimulates learning, influences academic pathways and contributes significantly to academic success. We can define it as a psychological state of concentration and attraction to a particular subject or object, but also as a long-term predisposition to return to that subject repeatedly.

The four-phase model of interest development (Harackiewicz et al. 2016) combines these perspectives and provides guidelines for interventions aimed at stimulating interest and capitalizing on existing interests. Effective strategies to amplify interest include:

- creating attention-grabbing environments,

- using contexts that activate prior personal interests,

- problem-based learning, and

- emphasizing the practical value of the material studied.

Interests represent a person's crystallized preferences for particular areas of knowledge or activity and are manifested in appropriation

behaviours towards specific activities and imply that there is as much overlap as possible between preferences and specific activities. The greater the degree of overlap between preferences and activity, the greater the satisfaction, motivation and performance (Băban, 2001; Miclea & Lemeni, 2010).

The teaching model, based on occupational interests (Holland), has an impact on all the structural elements of the learning situation (Campbell & Holland, 1972), facilitating the development of each student's intellectual potential/skills by linking them to specific vocational interests (realistic, investigative, artistic, social, entrepreneurial, conventional).

Instructional activity designed in accordance with specific occupational interests facilitates the practice of career specific skills and knowledge of specific occupational fields (Tracey & Rounds, 1972).

Individualized and personalized pedagogy based on occupational interests theory leads to adaptations in content, teaching strategy, work tasks, teaching assessment and interpersonal relationships in the classroom.

The differentiated treatment of students is based on their own occupational interests, and the organization of teaching activity can be carried out according to the occupational interest profile of the class (Gottfredson, 1993, Armstrong et al. 2008).Teaching activity based on occupational interests implies changes in all forms of organization of teaching activity (frontal, individual and group). In order to realize curriculum design based on the theory of occupational interests (Holland) it is necessary to go through several stages

### 2.1. Conceptual framework of a curricular design– a possible model

The conceptual framework described was developed and implemented at the University of Utah by Calabrese et al. (2023). They worked on a curricular program called "solutioning", which combines scientific investigation and engineering design to foster students' interest and motivation in STEM learning. The model was applied in a study conducted at the middle school level, which served as contexts for testing and evaluating the program's effectiveness. Anchored in the principles developed by the National Academies of Science, Engineering, and Medicine (NASEM), the model is built upon the theoretical framework of the 5E learning cycle, adapted to include additional phases related to engineering and public education.

The conceptual framework described in the text focuses on integrating scientific investigation and engineering design as central elements of STEM learning, particularly in curriculum development. This approach emphasizes aligning scientific and engineering practices with core ideas and interconnected concepts, creating a three-dimensional learning structure.

**Figure 1.**
*Curricular design – conceptual framework, Callabrese at all*
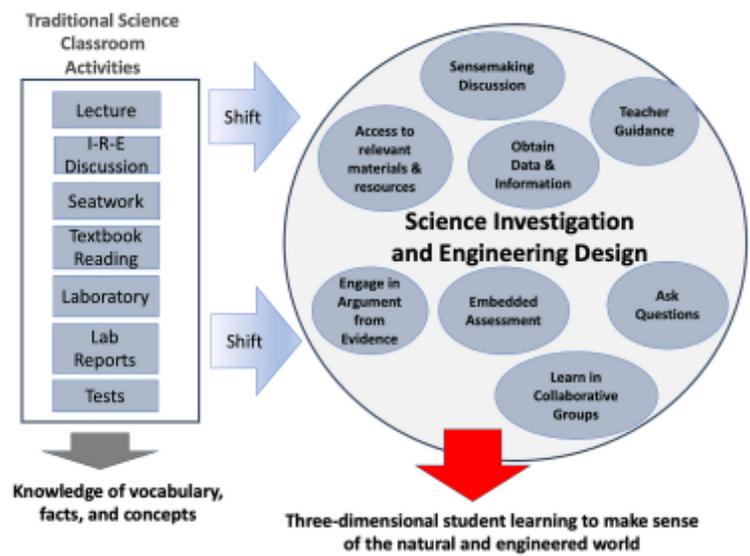


A particular aspect of the framework is its emphasis on connecting STEM content to students' personal experiences, enhancing their engagement and helping them better understand real-world issues. The activities are designed to develop essential 21st-century skills such as collaboration, critical thinking, and creativity. In this context, motivation plays a central role, as it significantly influences students' learning outcomes and fosters their interest in STEM fields. Through practical and relevant activities, students develop a sense of belonging and identity as members of the scientific community, motivating them to explore further and consider careers in scientific and engineering fields.

The conceptual framework also includes four design features aimed at promoting interest and motivation, as defined by the National Academies of Science, Engineering, and Medicine (2019). The first feature involves offering students choices and autonomy, which increases their intrinsic motivation and sense of control over the learning process. The second feature is promoting personal relevance by connecting STEM concepts to students' interests and experiences. Additionally, the learning materials are structured to be challenging yet accessible, maintaining a balance between difficulty and the

possibility of success. Finally, the investigations are placed in socially and culturally relevant contexts, which helps students relate more effectively to the content and perceive it as meaningful.

Thus, this conceptual framework proposes a transformation of STEM education, shifting the focus from traditional passive learning methods to dynamic, problem-solving-based approaches that equip students with the skills and motivation to address complex global challenges.

*2.2. Stages in conducting training based on the profile of occupational interests (RIASEC):*

1. Getting to know the occupational interest profile of the student and the class by completing the Holland Interest Questionnaire. Interest profiling can be carried out in collaboration with the school counselor teacher, in which case the result of the investigation can also be used for career guidance activities. It is also useful to communicate the student's interest profile to the parents. The Holland Occupational Interests Questionnaire can be applied from grade 7 onwards.

2. The second important step is to analyze the significance of each type of occupational interest with the characteristics described in Holland's theory, the hexagonal model.

3. Analyzing the impact of Holland's theory on the construction of the learning situation requires creativity on the part of the teacher and the analysis of the particularities of the model at the level of all the constituent elements of the learning tasks.

## 3. Discussions

*3.1. Applying Holland's occupational interest theory in the realization of curriculum design - case design*

The following are the milestones of the realization of the didactic activity based on occupational interests, a model applied since the school year 2022/2023, in the National High School "Decebal" Deva, at the level of the 10th grade, in a Romanian pilot program, developed at national level - O.M. Nr. 4872/30.08.2022. The teachers benefited from curricular counseling through the Information and Curricular Counseling Service - Hunedoara County Center for Educational Resources and Assistance for the valorization of occupational interests in the realization of curricular design.

The configuration of the learning situation implies the analysis, the correlation with the specific contents of each school subject and with the profile of occupational interests of the class, the creativity of each teacher being the one that will influence and realize each lesson design/ didactic activity. Teaching evaluation is carried out in accordance with the teaching and learning process.

*3.2. Frontal activity*

The activity can be organized from the front, in this case the significant aspect to be taken into account by the teacher is the profile of occupational interests of the class (example: if the first dominant interest is Investigative, for the design of the learning situation the teacher should reflect on the questions related to this type of interest, following the model below).

In order to design and realize a frontal activity, in which the adaptation of the teaching-learning activity to the types of vocational interests (RIASEC) can be realized, the answers to the questions below can be a reference.

The questions are indicative, each teacher can configure the frontal activity according to the particularities of the class and school subject and the profile of occupational interests.

▪ How do you personalize the learning experience for students?

▪ How do you stimulate students' creativity?

▪ Is critical thinking facilitated?

▪ Can pupils understand the life relevance of the lesson (career, benefits in everyday life, applications in different areas of life)?

▪ How do you stimulate pupils' cooperation?

▪ How do you facilitate the manifestation of initiative?

▪ Have you designed learning experiences that involve hands-on experience?

▪ How do you facilitate communication?

▪ Have you designed independent activities, with limits of responsibility?

*3.3. Differentiated teaching activities by groups, pairs*

The curricular design in groups or pairs consists in analyzing the vocational profile of the class, after having previously questioned the students. The constitution of groups or pairs is realized according to the hexagonal model of Holland types. We give for example the class of 26 students: Investigative-6,

Artistic -4, Social-4, Enterprising -3, Conventional -4, Realistic-5.

The constitution of groups or pairs can be realized by forming pairs, groups formed by pupils who have the same dominant occupational interest or by combining the following two types of interests: Realistic and Investigative (RI), Artistic and Social (AS), Social and Enterprising (SE), Enterprising and Conventional (EC).

The work sacks assigned to each pair or group should result from reflection and analysis of the characteristics of each type of occupational interest (see Holland's Occupational Interest Theory).

*3.4. Reflective questions for shaping the learning situation according to occupational interests Holland*

Adapting learning situations to students' occupational interests represent o consistent component of modern educational processes. In our case, John Holland's theory of vocational interests provides a valuable framework for understanding how different personality types respond to various educational and professional environments. This framework identifies six types of vocational interests—Realistic, Investigative, Artistic, Social, Entrepreneurial, and Conventional—which can guide the personalization of learning experiences.

Each of these types has distinct characteristics and unique needs regarding the structure and content of educational activities. For example, individuals with a Realistic profile prefer practical, well-defined tasks, while those in the Artistic category are motivated by opportunities to express creativity and inventiveness. Investigative learning fosters intellectual curiosity and critical thinking, while Social types value interaction and collaboration. On the other hand, individuals with Entrepreneurial interests seek dynamic, competitive activities, while those with a Conventional orientation are drawn to well-structured and organized tasks.

The set of reflective questions presented for each vocational type serves to guide educators in designing learning situations that meet individual needs and preferences. These questions help assess how well learning activities promote the skills and values relevant to each personality type, thus contributing to the development of meaningful and personalized educational experiences. Integrating these principles into teaching practice can enhance student motivation, fostering both academic progress and long-term career orientation.

- ▪ **REALIST**

*Has the opportunity to do group projects?*

*Are there tangible learning goals?*

*What is the practical usefulness of the work tasks he/she is involved in?*

*Are limits of responsibilities set?*

*Is the time limits set in accomplishing work tasks?*

*Does he/she have the opportunity to work in pairs or groups with colleagues who have similar beliefs and values?*

*Do the learning content/tasks involve practical problem solving?*

*Has the opportunity to work with tools or machines?*

- ▪ **INVESTIGATIVE**

*Is it able to work independently?*

*Has the opportunity to practice writing, research, analytical skills?*

*Has the opportunity to practice critical thinking?*

*Has the opportunity to practice new skills?*

*Is it intellectually challenged by the content?*

*Is there an opportunity to explore resources?*

*Is it individual reflection facilitated?*

- ▪ **ARTISTIC**

*Is it able to use his/her imagination, creativity, inventiveness?*

*Is artistic reflection (deductive, analogical) facilitated?*

*Do they have the necessary materials to realize new artistic products?*

*Are there opportunities for reflection/contemplation?*

*Do work tasks require flexibility?*

*Can accomplish tasks independently?*

- ▪ **SOCIAL**

*Has opportunities for group work/social interaction?*

*Can it be involved in group activities in which to provide support, help, support, teach?*

*Can they share own feelings, insights, responsibilities?*

*Does the work task/learning experience involve ethical, humanistic aims?*

*Do they have opportunities for communication?*

- **ENTREPRENEUR**

*Can assume work role?*

*Is metacognitive monitoring of learning facilitated?*

*Is the activity dynamic and competitive?*

*Are communication skills practiced?*

*Has the opportunity to practice and develop negotiation skills?*

- **CONVENTIONAL**

*Does the activity in which he/she is involved give him/her the opportunity to practice organizational skills?*

*Is the activity enough structured and organized?*

*Are data analysis and calculation skills involved in the task?*

*Has the opportunity to operate on the computer, to apply certain procedures?*

*Are expectations correctly formulated?*

*3.5. Benchmarks in setting up the learning situation based on occupational interests*

Benchmarks in setting up the learning situation based on occupational interests ensure that educational activities align with students' unique skills, preferences, and career aspirations, fostering engagement and meaningful development.

**Table 1.**
*Benchmarks in setting up the learning situation based on occupational interests*

| Holland types | Work task/teaching methods | Learning strategies |
|---|---|---|
| REALISTIC | -Use of equipment, tools, manual dexterity, digital <br> -Example teaching methods: CAI, Exercise <br> FRISCO method (role given is that of realistic interest) <br> Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC) | -underlining main ideas, ideas, formulas; <br> -logical organization of learning material; <br> -use of study tools; maps, tables, graphs; <br> -using tools and objects to be learned; <br> -making graphic links between knowledge; <br> - conducting experiments; <br> -categorizing, reasoning; |
| INVESTIGATIVE | -Research-type activities in all areas, analyzing, investigating data, hands-on activities with text actively <br> -Example teaching methods: Experiment <br> -Critical treatment of material can be done in writing, individual reflection or group activity, <br> -FRISCO method (the role given is that of researcher, doctor), <br> -Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC) | -Rewriting, reorganizing study material; <br> -creating scenarios in your mind for the information read; <br> -conducting experiments; <br> -formulating own ideas on a problem; <br> - debating responsibly and rationally choosing the best solution; <br> -arguing one's own interpretations objectively; <br> - combining intuitive and logical thinking; <br> - formulating several perspectives for analysis and solution; <br> - formulating and evaluating independent opinions; <br> - the courage to promote one's own contributions and accept diversity; |
| SOCIAL | - Communication <br> -Activities in pairs, groups <br> -Example of teaching methods: Think-Work in pairs-Communicate, <br> -Philips 6-6, <br> -635 method, <br> -FRISCO method (the role given is that of the teacher), <br> -Reciprocal teaching method, <br> -Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC) | -learn by listening to a conversation or presentation; <br> -learn in groups by asking and answering questions; <br> -explaining the sequence of content to others; <br> -explaining new information, verbal expression of ideas; <br> -discussing the content to be learned in a study group; |
| ARTISTIC | -Activities involving originality, imagination, artistic expression <br> Examples of teaching methods: <br> -Creative Questioning, <br> -Philips 6-6, <br> -FRISCO method (the role is that of a painter, musician) <br> -635 method, <br> -Brainstorming, <br> - Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC) | -Using movement, games, dance, dramatization for learning; <br> -creating rhymes, beating the rhythm while learning; <br> -organizing information into structural patterns; <br> -underlining important information with certain colors; <br> -making graphic links between information; <br> -using journals; <br> -using notebooks to express ideas <br> -making creative products; |

| | | |
|---|---|---|
| **ENTREPRENEUR** | -Initiating and realizing projects<br>-Team working<br>-Communication<br>Example of teaching methods:<br>- Let me have the last word<br>- FRISCO method (the role given is that of entrepreneur, politician)<br>-Brainstorming with role exchanges (each pupil is given a role corresponding to the type of dominant interest (RIASEC) | - having competitions with other pupils;<br>-presenting the material to another person;<br>-periodic reflection on what has been learned;<br>-reading information or writing topics for discussion; |
| **CONVENTIONAL** | - Computer operation, application of new procedures, manipulation of objects,<br>Examples of teaching methods:<br>- IAC<br>-Worksheets<br>-SINELG<br>-FRISCO method (the role given is that of a computer scientist)<br>-Brainstorming with role exchanges (each student is given a role corresponding to the type of dominant interest (RIASEC) | -organizing objects and tools in the correct order;<br>-making graphic links between information;<br>-writing summaries containing the main points of the material;<br>-transcribing information;<br>-Practical use of the content learned;<br>-identifying patterns in the information presented;<br>-summarizing |

Based on this system of curriculum counseling, unique in Romania and currently being implemented, we believe that the use of Holland's theory of occupational interests in the curricular design of high school teaching activity represents an opportunity to transform the educational process into a more personalized and relevant approach. By linking the types of vocational interests with school activities and content, students can develop specific skills to support their academic and professional trajectories (Nauta, 2010).

## 4. Conclusions

The integration of Holland's Theory of Vocational Interests (RIASEC) into curricular design presents a transformative approach to education, particularly at the high school level. By aligning educational activities with students' occupational interests, this framework addresses individual learning preferences, enhances engagement, and fosters motivation. Also, the practical application of this approach, as demonstrated in Romanian pilot programs, highlights its potential to create dynamic and inclusive educational environments.

One of the primary achievements of this model is its ability to personalize the learning experience. Through activities tailored to vocational interest profiles, such as Investigative, Realistic, Artistic, or Social, students can better connect with the content, which leads to greater satisfaction, performance, and long-term interest in their academic and career pathways. This personalized approach also bridges the gap between education and the labor market by equipping students with career-specific skills that align with their interests and societal needs. Furthermore, the strategy emphasizes active learning, problem-solving, and collaboration, by encouraging creativity and critical thinking, the framework fostering essential 21st-century skills that prepare students for the complexities of a rapidly changing world. Whether implemented through frontal, group, or individualized activities, the model ensures that all students benefit from learning experiences that resonate with their unique profiles, supporting both academic achievement and personal growth.

The Romanian pilot programs demonstrated that curriculum designed with Holland's theory in mind not only facilitates the acquisition of knowledge but also supports the holistic development of students, but also emphasize it s role in this process, as their creativity and adaptability are central to implementing this differentiated pedagogy. The role of educational counselors is equally significant, particularly in profiling students' interests and guiding their career exploration effort, the integration of RIASEC-based curricular design into education representing a forward-thinking strategy that can transform traditional approaches. It prepares students to navigate modern societal challenges, making them active, competent, and adaptable citizens. This model not only enhances the learning process but also ensures that education remains relevant and meaningful in a diverse and evolving global context.

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