

Valentine U. Okwara¹ 

Oyinlola O. Adebola² 

AFFILIATIONS

¹ & ² University of the Free State, South Africa

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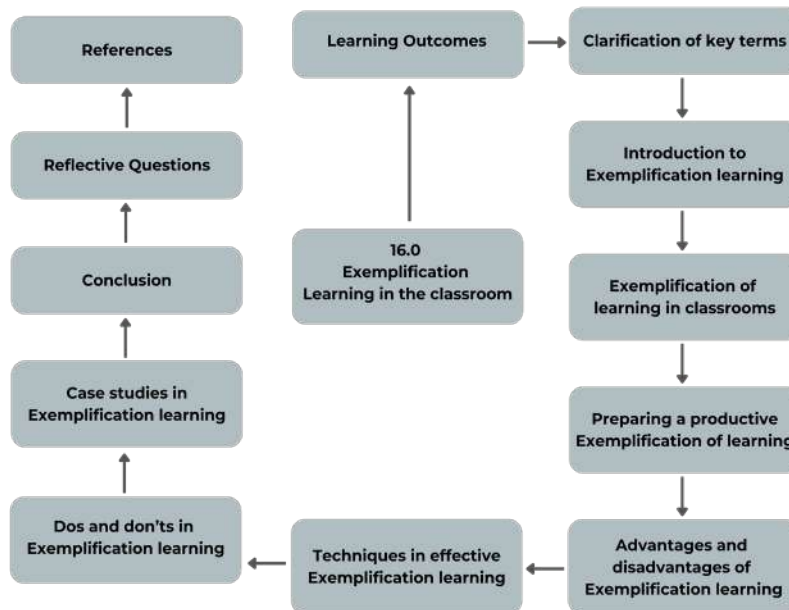
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REFERENCE

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16.1. Concept Map



16.2 Learning Outcomes

After studying this chapter, you should be able to:

- Recognise the prospects of exemplification learning as a hands-on approach in higher education and training.
- Determine the critical theoretical and real-world evidence supporting exemplification learning, and discuss its experiential applications and future directions.
- Identify the benefits and limitations of exemplification learning, as well as the challenges and opportunities for its implementation in various contexts within higher education and training.
- Explore the effectiveness of tangible examples in learning, and make recommendations for future research and practice in higher education and training.

16.4 Introduction to Exemplification Learning

(i) Introduction

Exemplification learning is an educational approach that highlights the study of specific examples or cases rather than applying general principles or rules (Morgan, 2019). Recently, this approach has gained significant recognition as a powerful tool for improving learning outcomes, especially in complex or abstract domains within higher education and training. In exemplification learning, students are provided with examples of what is being taught to help them understand abstract concepts or ideas described in the lesson. This learning approach has been applied in various educational contexts, from blended learning to classroom dialogue. It is highly effective in enhancing the demonstration of lesson objectives, thereby strengthening student learning outcomes. This chapter discusses the theoretical foundations of this learning approach and provides examples of its application in various classroom settings. This includes the learning outcomes, exemplification of learning in the classroom, preparing a productive exemplification of learning, and the techniques of effective exemplification learning, as well as some case studies on exemplification learning (Chiva-Bartoll & Fernández-Rio, 2022). Additionally, it explores the potential of exemplification learning in improving learning outcomes, focusing on its practical applications and future directions.

The chapter is based on the teachings and practical experiences of the authors, alongside a review of relevant literature on the theoretical foundations of exemplification learning in higher education and training, including both theoretical and empirical research. It also draws on case studies and examples of successful implementation of exemplification learning in the broader natural sciences and Economic and Management Sciences classrooms.

(i) Theoretical foundations

Exemplification learning is rooted in cognitive psychology and learning theory. This theory focuses on cognition, which includes all conscious and unconscious processes by which knowledge is gained, such as perception, memory, attention, and problem-solving (Barkay, 2017). Jean Piaget is acclaimed for developing the first cognitive psychology theories in the 1930s. One of the principles of this theory is that when information is presented in abstract form, it dramatically affects students' cognitive ability to process and retain that information. Therefore, any teaching strategy that offers less abstract information will significantly help to improve students' learning. This means that using specific examples, as conceived in exemplification learning, to illustrate abstract concepts can strengthen students' cognitive abilities. This can be attributed to the concrete and realistic mental images that examples can present, as well as their ability to facilitate the transcription and retrieval of information during learning.

Furthermore, exemplification learning proposes that students are more likely to transfer what they have learned to new situations if they have been consistently exposed to multiple views illustrated by examples of the same concept or idea (Barkay, 2017). Introducing numerous examples can enable students to develop a more reliable and flexible mental interpretation of the concept, which they can apply to different contexts and situations to enhance their learning.

16.5 Exemplification of Learning in Classrooms

Gone are the days when teachers entered the classroom intending to use traditional teaching methods, such as rote memorisation, and expecting desirable outcomes and lifelong knowledge from students. Teaching in the 21st century requires educators to go the extra mile to acquire knowledge that fits into today's education system, applying relevant examples to explain topics in a way that students will understand. Exemplification in learning environments today should be considered paramount for sustaining effective education. According to Ramos-Rodríguez et al. (2017), using examples in the classroom has been proven to be particularly beneficial for students classified as "slow learners" or those who struggle to engage in their respective classrooms. In this chapter, exemplifying learning in the higher education and training sector refers to the ability to use trending, simple, and appropriate examples connected to the topics, which aids in explaining issues or concepts to the best of the instructor's knowledge, thereby helping students acquire an in-depth understanding. Another aspect that instructors need to consider regarding the use of examples is their relevance to real-world situations and how they fit into the topics being taught (Barkay, 2017).

Oliveira and Brown (2016) have criticised the long hours spent teaching 'theory' without infusing the practical aspects of the topic or concept under discussion. For instance, based on observations, I have heard students complain about sitting for two hours listening to lectures without being actively involved. Consequently, they become uninterested and develop the tendency to skip classes. The good news about exemplification in learning is that it can be applied to any subject, regardless of the topic. The following paragraphs discuss how exemplification could be used across various research fields, domains, or subject content.

Quantitative analysis: Students can employ exemplification learning techniques to analyse quantitative informational material, including data derived from experiments, observations, or simulations. This approach can enhance students' comprehension of the underlying patterns and relationships within the data and assist them in cultivating critical thinking skills, logical reasoning abilities, and evaluative thinking capabilities.

Designing representations: Exemplification learning can be used to create models that mimic natural phenomena, such as climate or environmental systems. This approach can help students understand complex natural systems and how they interact with one another.

Significance testing: Students can use exemplification learning to test hypotheses by investigating and adapting data to determine whether it supports or contradicts a particular theory being examined. This approach can help students understand the procedure and develop their reasoning skills.

Problem-solving: Exemplification of learning can be applied to solve practical problems in various contexts. For instance, in the natural sciences, it can be used to project the spread of a disease or to develop new materials with distinct characteristics. In the social sciences, problem-solving can help explain contemporary social issues such as unemployment, HIV/AIDS, and rape. Moreover, problem-solving can assist students in developing skills and learning how to apply knowledge to resolve real-world problems.

Visual aids: Students can use exemplification of learning to create visualisations of scientific and non-scientific data, such as maps or graphs, which help them understand and communicate scientific concepts to others.

16.6 Preparing a productive exemplification of learning lesson.

In this section, we discuss the preparation for a productive exemplification of learning lessons in higher education, including subjects such as Natural Science, Economic and Management Sciences, or any other classroom setting. This process will involve, but not be limited to, the following steps:

Define the learning objectives: The instructor should define the learning objectives that exemplification of learning can help achieve in the classroom. This may include developing logical reasoning abilities, improving problem-solving skills, and enhancing scientific literacy in the context of commercially oriented or industry-specific problems.

Determine the correct information: Select information relevant to the learning objectives and curriculum in the natural sciences, economic and management sciences, or any other learning area you are facilitating. This may include information from real-world scenarios, such as environmental conservation, ecological restoration, market analysis, and human resource management.

Preprocess and generate visual information: Preprocess and visualise the information to help students understand its underlying patterns and relationships in the context of real-world problems. This may involve techniques such as visualisation using tools like Excel.

Develop exemplification of learning activities: Design exemplifies learning activities that engage students and help them acquire relevant concepts and skills. This may involve visual information processing, model building, and model interpretation, where students utilise exemplification techniques to explore and understand the information and its implications for decision-making.

Provide guidance and feedback: Provide advice and feedback to students as they work through exemplifying learning activities. This may involve one-on-one support, peer-to-peer collaboration, and instructor feedback, allowing students to learn from their mistakes and improve their skills.

Evaluate student learning: Evaluate student learning using appropriate assessment methods that measure their ability to demonstrate the learning objectives. The evaluation of student learning may involve project-based assessments, case studies, or written assignments, which allow students to showcase their understanding of learning concepts and skills in real-world problem-solving.

16.7 Advantages and disadvantages of exemplification learning

(i) Advantages

Improved understanding: Exemplification of learning uses concrete examples, real-world scenarios, and case studies to help students understand complex or abstract concepts better. Students can more easily see how the concept applies to different situations and contexts by providing specific instances of how an idea works in practice (Oliveira & Brown, 2016).

Improved memory: Exemplification of learning can improve the retention of information by providing memorable and engaging examples that students can connect with. By creating more meaningful and precise mental representations of information, students are more likely to remember what they have learnt.

Increased motivation: Exemplifying learning can increase students' motivation by making it more exciting and engaging. When students see how a concept applies to real-world situations, they are more likely to feel motivated to learn more about it.

Improved problem-solving skills: Exemplification learning can help students develop better problem-solving skills by exposing them to various examples and case studies that require different problem-solving approaches. Students can create more flexible and creative problem-solving strategies by practising with multiple examples.

Improved knowledge transfer: Exemplification of learning can improve the transfer of knowledge and skills to new situations by providing students with examples and demonstrating the application of concepts in different contexts. By seeing how an idea works in different situations, students can better understand how to apply the concept in new and unfamiliar contexts.

(ii) Disadvantages

Restricted perspective: Exemplification learning is most effective when clear and relevant examples are used to illustrate concepts. However, in some instances, relevant examples or cases may not be available, which can limit the effectiveness of this approach.

Demanding in terms of time: Creating and analysing examples and cases can be time-consuming compared to traditional instructional approaches, such as lectures or readings. This can be disadvantageous for instructors who are working within a limited time frame or have restricted resources for lesson planning and preparation.

Relying too heavily on cases: Exemplification learning can lead to an overreliance on specific examples or cases, which may not accurately represent a concept's broader context, perspective, or complexity. This reliance can limit students' ability to apply concepts in new and unfamiliar situations.

Incorrect understanding of cases: Students may need to be more precise and comprehend the examples provided, depending on the depth of the concept being taught. This can result in an incorrect or incomplete understanding of the concept.

Difficulty in drawing general conclusions: Exemplification of learning may not lead to generalising concepts beyond the specific examples provided due to the limited ability to extend findings. Therefore, students may struggle to apply concepts to new situations that do not closely resemble the examples given.

16.8 Techniques in Effective Exemplification of Learning

- **Define the area of knowledge or skill to be taught:** The first step in effectively exemplifying a topic is identifying the concept or skill that students need to learn. This may be a new concept or a skill that students have already been introduced to but require further clarification on.

- **Decide on relevant and captivating sample scenarios:** Once the concept or skill has been identified, choose suitable and engaging scenarios to help students understand and remember the idea being studied. The criteria for selecting a relevant scenario should include enjoyment and memorability, as well as the ability to demonstrate the critical aspects of the concept or skill being taught.
- **Assess and break the examples into components:** After selecting the desired topic, analyse it into its parts. Identify the specific features or characteristics that make the examples relevant to the concept or skill being taught, and explain how these features relate to the overall concept or skill.
- **Provide instruction and offer constructive feedback:** As students work through the examples, the facilitator or lecturer is responsible for providing guidance and constructive feedback to help them understand the critical aspects of the concept or skill being taught. Offer explanations and clarifications as needed, and encourage students to ask questions and share their understanding of the examples.
- **Advocate for the practical use and broader integration of information:** Once students have worked through the examples, the facilitator or lecturer should encourage them to apply the concept or skill to new situations and contexts. Additional examples or scenarios should be provided that require students to use the concept or skill in unfamiliar ways, with guidance and feedback offered as needed.
- **Evaluate and ascertain the effectiveness of learning:** Finally, evaluating and assessing students on the learning outcomes of exemplification learning is essential. Therefore, using assessment methods such as quizzes, tests, or real-world application tasks will help determine the effectiveness of this approach in promoting learning and skills development.

By following these steps, facilitators and lecturers can implement effective exemplification of learning that engages students, promotes understanding and retention, and supports the transfer and application of concepts and skills to new situations and contexts.

16.9 Dos and Don'ts in Exemplification Learning

The following outlines what can and cannot be achieved through the exemplification of classroom learning.

i. Dos of Exemplification Learning

Examine and evaluate the outcomes of the learning process: Use real-life scenarios and case studies to illustrate concepts and theories. Relate theoretical knowledge to practical applications in the world, demonstrating how these concepts are applied in real organisations.

Stimulate thoughtful inquiry: Prompt students to analyse and evaluate the examples provided during the lesson. Encourage them to consider multiple interpretations, identify cause-and-effect relationships, and make connections between the exemplars and the underlying principles.

Cultivate engaged involvement: Engage students in discussions and activities that require them to actively apply the concepts learned. Encourage them to share their own experiences or observations related to the topic, fostering a collaborative and interactive learning environment.

Make use of current developments: Stay updated with current news and events, using relevant examples to demonstrate the application of concepts in real-time situations. This approach helps students understand the dynamic nature of the world and how theories and practices evolve.

Incorporate examples from various sources: Utilise various examples from different cases. This exposes students to contexts that may apply to a familiar case and allows them to understand the universality of certain principles while appreciating the unique challenges specific to each case.

Incorporate tangible and visually stimulating illustrations: Utilising tangible objects, visual aids, and interactive simulations to illustrate scientific concepts, along with hands-on experiments and demonstrations, can help students observe phenomena directly and reinforce their understanding of abstract ideas.

Transfer theoretical knowledge to practical applications: Relate scientific concepts to everyday life and practical applications by highlighting how scientific principles operate in the natural world, technology, medicine, and environmental issues. This approach helps students appreciate the relevance and significance of scientific knowledge.

Simulate curiosity-driven learning: Foster curiosity and critical thinking by posing questions and problems that prompt students to investigate and find solutions. Encourage them to explore scientific phenomena, gather evidence, analyse data, and draw conclusions. This active engagement enhances their skills in scientific inquiry. Encourage collaborative educational practices: Promote group discussions, laboratory work, and project-based activities that encourage students to collaborate in exploring scientific concepts and solving problems. Collaboration enhances their communication skills, teamwork, and ability to share and analyse data collectively.

Highlight the most recent developments in scientific research: Introduce recent discoveries and ongoing research in relevant fields. Share up-to-date information, news articles, or scientific publications to familiarise students with the dynamic and evolving nature of scientific knowledge.

ii. Don'ts of Exemplification Learning

Avoid making excessive generalisations based on isolated cases: Avoid using examples that oversimplify or generalise complex situations too broadly. Ensure that the frameworks capture the distinctions and complexities of real-life scenarios to help students develop a deeper understanding.

Don't limit yourself to textbook illustrations: While textbooks can provide a good foundation, it's important to avoid relying solely on their examples. Supplementing them with real-world cases can bridge the gap between theory and practice, offering students a more comprehensive learning experience.

Don't overlook ethical principles: Ensure that ethical concerns are adequately addressed when providing examples. Avoid using examples that promote unethical behaviour or disregard social and environmental responsibilities. Instead, emphasise ethical decision-making and responsible practices.

Avoid using misleading or incorrect illustrations: Ensure that the examples used are scientifically accurate and supported by evidence. Avoid perpetuating common misconceptions or using outdated information that could mislead students.

Don't overlook safety concerns: When conducting experiments or providing examples that involve practical work, prioritise student safety. Follow proper safety protocols, provide clear instructions, and ensure that students are aware of potential risks and necessary precautions.

Concentrate on a particular subject matter for illustration: While focusing on specific scientific disciplines may be necessary, pay attention to the interdisciplinary nature of sciences. Incorporate examples that bridge multiple scientific disciplines to help students understand the interconnectedness of scientific knowledge.

16.10 Case Studies in Exemplification Learning

The following are case studies involving the exemplification of learning:

Case Study A: Applying Advertising Strategies in the Real Estate Industry

In a marketing-focused course, the instructor introduces a case study that examines the application of advertising strategies within the real estate sector. The students are organised into groups and provided with a real-world scenario in which they assume the role of marketing consultants for a real estate agency named Tintin & Gloria (Pty) Ltd. Their task is to develop a comprehensive advertising plan to promote a new housing development. The students analyse the target market, conduct market research, and apply marketing concepts such as product, price, place, and promotion to formulate a strategic marketing plan. They present their projects to the class, which include strategies for digital marketing, social media engagement, and traditional advertising. Through this case study, students acquire practical insights into the application of advertising and marketing principles in a specific industry (real estate), thereby enhancing their analytical skills and understanding of marketing strategies within a real-world context.

Case study B: Exemplification of learning through a field study of an ecosystem.

In an ecology course, the educator utilises exemplification of learning through a field study focused on ecological interactions and biodiversity within an ecosystem. Students participate in a visit to a local nature reserve to observe and gather data regarding various ecological factors. They examine plant and animal species, measure abiotic factors such as temperature, humidity, and soil composition, and analyse the relationships between organisms (biotic factors) and their environment. Within the classroom setting, students collaborate to interpret the collected data, identify patterns,

and construct ecological models to elucidate the observed interactions within the ecosystem. Through this case study, students acquire practical experience in environmental fieldwork, develop skills in data collection and analysis, and enhance their understanding of the interconnectedness and complexity of ecosystems. Additionally, the case study fosters an appreciation for the significance of biodiversity and the effects of human activities on ecosystems, thereby reinforcing the relevance of ecological concepts in real-world contexts.

16.11 Conclusion

Exemplification of learning has the potential to transform higher education and training by equipping students with effective tools for utilising examples to acquire knowledge and skills in complex and abstract domains. This book chapter examines the exemplification of learning in relation to its theoretical foundations, as well as its benefits, advantages, disadvantages, strategies for implementation, and associated challenges and concerns. Case studies illustrating successful implementation of exemplification of learning are also presented. Moreover, the exemplification of learning offers insights into the application of examples to render abstract concepts more meaningful and relatable, as well as how knowledge acquired in one domain can be transferred to analogous or familiar contexts in other domains. This chapter aims to contribute to the ongoing discourse regarding the significance of practical learning approaches and their role in shaping the future of higher education and training by elucidating both the benefits and challenges inherent in these methodologies.

Reflective Questions

- a. What is your current understanding of the term “exemplification of learning”? Has this chapter challenged or confirmed your previous assumptions regarding the hands-on approach to exemplification of learning?
- b. Can you think of specific examples from your learning experiences where using concrete examples or cases improved your understanding and/or memorisation of information? How will you apply this approach in future learning situations?
- c. What do you think are some potential limitations or drawbacks of this learning approach? What further questions or areas of inquiry does this chapter raise for you?
- d. How do you intend to address these limitations in your future learning regarding the question in (c) above?

16.13 References

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