ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

	Paulo Gonzalez, Marcelo Correa, Mariana Lazzaro-Salazar, Marco Toranzo and Barbara Alcaino **pgonzalez@ucm.cl** **Universidad Católica del Maule** **Talca Chile**

ABSTRACT

In this article, transparency is presented as an ethical value that can be used during the training process of engineers. The article begins by describing the concepts related to the ethical values involved in this process, to then relate ethics, automatic information and transparency. In this paper, we propose that transparency is a valuable contribution to the training of engineers. Finally, some conclusions on these issues are presented.

Keywords

Ethics, Transparency, Engineering, Higher Education.

INTRODUCTION

The word transparency means to "show the light through", derived from the Latin "transparentum" [9], which is considered necessary for the population to build a state of reliability. The ethical value of transparency of information is a requirement of the industry and information systems (especially automated ones), which has increased through the years. Transparency depends on different factors: (1) the way in which it has been made transparent, (2) the access conditions and (3) the availability of the information. Transparent information is selected in certain ways by the person who issues it, which could be due to a legal process or simply to satisfy any requirement of its recipients. Therefore, it is necessary for someone to produce information, and for someone to receive it. Transparency is defined as an information flow between two stakeholders [5]. From a political point of view, transparency is seen as a requirement of citizens [1]. Hosseini et al. [6] introduce reference models of transparency in systems, which can be applied to any domain where there is information flow.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

In this work, the value of transparency is established as an ethical value that makes it possible to improve the training of competences of students of Engineering careers, while also holding the educational entities responsible for implementing this in their training programs. In what follows, we define the concept of transparency, and offer an analysis of its use during training.

To achieve this, the article has the following sections: in section 1, the relationship between ethics, information and transparency is discussed, in addition to a discussion on how the latter relates to ethical principles. Section 2 presents a proposal to incorporate transparency into the training of engineers by discussing the problem, the importance of the moral duty of the profession, the relationship between transparency, responsibility and control, transparency and academic freedom and the relationship between ethical principles and transparency.

1 ETHICS, INFORMATION AND TRANSPARENCY

Today's world is going through an information revolution, due to the fact that modern life has centered around it. In everyday life, information has affected people across different fields such as medicine, commerce, security and transport, among others. Education is a sensitive area for the development of a nation, and engineering in particular is one area of education that is closely related to the economic and technological growth of Chile. Information technology, however, is a relatively new area that trains professionals to be able to generate information to be willing to make decisions. The term 'computing' comes from the automatic processing of information, that is, the generation of information from data. The processed data entails the production of information for the interested party. The effects of automatic information on different areas of knowledge can have positive connotations (or not), which, naturally, results in the "information and information ethics" debate [2]. Hayes, in [4] performs an analysis on the deterritorialization of information and the right of privacy when the data are vulnerable to being ported in international networks. The ethics of information transparency in the production of information is described in [8] and an analysis of the responsibilities of the main online service providers is made in [7]. The study highlights two main results; the first one relates to its potential public uses and the second one to an ethical framework.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

A possible neutrality of information implies that it is not an ethical principle. On the other hand, neutrality can become a predominant factor when releasing information. The generation of information from computerized data processing supports the following ethical principles [8]: accuracy, fairness, impartiality and respect. In addition, some ethical principles that may be affected when generating information involve: privacy, responsibility, copyrights and welfare. On the other hand, security, beneficence and consent are ethical principles that require information, because a priori knowledge is necessary in order to apply them, while the ethical principles, such as the copyright, anonymity, freedom of expression and of privacy, help to regulate the use of information. Transparency fulfills these two functions; it requires prior information to exercise it as a principle, and at the same time, it is a principle that is required to regulate the information.

2 TRANSPARENCY IN THE TRAINING OF ENGINEERS

2.1 Problematizing the issue.

The main idea of the article is not to expose curricular problems, but rather to discuss the ethical concerns that can be unveiled by advocating transparency. The latter could help identify and generate effective strategies and to implement skills where the value of transparency is reflected in their professionalism.

2.2 The moral duty of the profession

The School of Engineering is responsible for the training of engineers with specialties in different areas of interest. Schools and faculties of engineering cultivate the discipline and transfer research through their pre and postgraduate training. It is through the new professionals that they contribute to a constant and gradual development of the nation.

During their training, students will achieve competences with which they will later enter the professional market. Ethical values such as transparency should be part of their training in order to raise awareness of ethical issues from the very classroom. The employment of laboratory activities, for instance, where variables are controlled, allows engineering students to conduct experiments with verifiable quantitative results. The validity lies in the methodology, and then the results considered as true. Being able to access information and reproduce experiences involve the development of knowledge and the establishment of truthfulness and transparency plays a vital role in this process.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

2.3 Transparency, responsibility and control

To achieve a result in such a way that an engineering professional is transparent in their professional practice, transparency should be a natural element in their professional training. Thus, the value of transparency must be fostered from the beginning of their professional training, which gives rise to the need for a tool to assess it during the process.

The disparity in the quality of the training of engineers depending on the university or school of training is well known. This is due to the fact that activities are carried out in the "shadows". However, today's society demands transparency; for example, students and other stakeholders want to know how resources are used and how they are used in the training of new professionals. In this context, we need professional training processes to develop such an approach that can be understood by interested parties, so that the training of students is transparent.

The principles that unify the values we have as a society and that should therefore be reflected in the training of engineers are: non-maleficence, justice, beneficence and autonomy. In what follows, we show some situations that could be included as part of the training to achieve ethical standards based on transparency.

Social impact: the idea is to make the social impact that results from the training of engineers transparent, explaining to students the needs of the profession and their contribution to the development of the nation, that is, the impact on human development, the responsible use of resources and the potential damages and/or dangers of these professional practices.

Validity of the professional training: be clear during the training process in regards to the scope of the competences taught, showing how the training is based on the graduate profile. Equity in the training process: this would be an implication of natural regulation due to the transparency of the processes, leading to the enhancement of this principle during professional training. A richer discussion on this topic, however, is beyond the scope of this work.

The risk/benefit balance: show how to control risks and maximize benefits. The principle of social organization serves to the development of human beings, which does not mean that human beings are at the mercy of the community. The motivations behind how the formative process is aligned with the development of humanity should be transparent.

Evaluative milestones: clearly show the achievement of competences during the training process. Provide transparency by clearly showing the evaluative processes involved in each curricular activity, their alignment with the indicators of achievement, teaching / learning strategies, intentionality and agents involved during the process.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

All the above aspects can be highlighted in the syllabus, whose computerization allows a transparent treatment of its components, allowing students, academics, directors and external agents to access to training details in real time. Being transparent at this level can also be seen as a tool that allows the release of hidden information and the co-responsibility of all parties in its use. This enables all relevant parties to visualize curricular advances. This type of transparency seeks to prevent someone from having total power over any given curricular reality.

2.4 Transparency versus academic freedom

Thus, it is necessary to emphasize the fact that transparency does not threaten academic freedom, since academic freedom is not something hidden. Freedom does not lie in the privacy of knowledge for a few, but in the right of everyone to participate. Where there is participation, and personal and community development, then there is freedom. In ancient times, the freedom of the king implied the abandonment of the liberties of the subjects. Nowadays, a responsible leader must be accountable in the eyes of their communities and make his acts transparent (public account). In today's world, transparency is a necessity and an obligation. Transparency helps to distribute power more equally and to avoid abuse.

Every act of freedom has its limits, and this has to do with duties. The academic's duty is to comply with the curricular activity, and for students to achieve the competences required in the contents distributed in the syllabus of each curricular activity. In this way, and following the logical order manifested in the curricular plan, each sub-competence needs to be developed in order to develop a more generic competence. Such transparent processes help to improve trust between students and academics.

2.5 Principles and transparency

Transparency affects the following principles: (1) Beneficence: it is believed that quality training is sought by students, considering a curricular plan whose ambitions are the training of expert engineers with skills that prompt adequate work performance in the market. (2) Autonomy: this value involved being free to make informed and competent decisions. (3) The principle of justice: the safe delivery of contents involving the co-responsibility of all the parties involved. (4) Non-maleficence: when the institution and the academics are responsible for delivering all the contents and being responsible for promoting the necessary strategies to maximize students' potential and to minimize chances of student vulnerability (e.g. when the grant provided by the state finishes).

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

To make the ethical analysis of the training that is taught through the curriculum in engineering, the facts, values and duties that are recognized in the training program need to be differentiated. To establish the facts, values and duties, we will adapt the model of four boxes proposed by Albert Jonsen, Siegler and Winsdale [3]. However, the order of priority of the principles we here present is the reverse. The most basic principles are those of non-maleficence and justice, and autonomy and beneficence can be found as part of them. In this way, it is possible to perform an ordering analysis to express the facts and locate the context well. The topics that could be used are listed below:

- Curricular guidelines

- Freedom in lines of professional training

- Responsibility in professional training

- Contextual facts

The curricular guidelines allow expressing the facts regarding the training project, and the distribution of the contents in the curriculum (curricular activities). The contents must be delivered to the students in such a way that there is a progressive learning and overcoming the deficiencies at the start of the training process. The idea is to always have the principles of beneficence and non-maleficence in mind when designing and approaching professional training. By accepting full responsibility of students' entry profile, we can project and provide tools for students to acquire the necessary skills in a logical order. This type of information needs to be socialized in transparent ways to students at the institutional level.

Giving students autonomy to choose different areas of interest can be achieved by providing optional courses. In this way, students have the option of choosing among areas of training, to evaluate which one suits them best or which projects they would like to develop in the future. These efforts must be guided by the academics, projecting the disciplinary training and focusing it on applicable solutions in the industry. Here the way in which academics must adapt the way in which the contents will be delivered is very important, emphasizing the value of the latter according to the discipline or disciplinary area. This type of information must be public and undoubtedly transparent. This transparency should be reflected in postgraduate training programs and applied research projects to therefore stimulate the interest of students in pursuing postgraduate studies.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

The responsibility is focused on the training that the students are receiving (quality). The idea is to consider quality according to the competences that must be achieved. At this point external requirements must be considered, or the demands of the medium for future professionals, having a vision and anticipation of change. This type of information is not currently available in its entirety. Although there are efforts such as proposing new teaching-learning strategies, it is not something that has been made transparent to the community. The only ones who have known this information are the students who have had the experience of taking the chairs with the new strategies.

Contextual facts, involve knowing the reality of the students and the income profile. The aforementioned implies to take charge as an institution of the deficiencies that the students have and with this to achieve the graduation profile during the course of their training. The only way today are the results, the number of students that enter, versus those that graduate. It is also necessary to evaluate the effectiveness of professionals in the market, which today is done with annual meetings with graduates. The information is transparent from mechanisms such as accreditation, but normally there are no procedures that establish the information as something public and transparent.

CONCLUSIONS

By revealing what happens in the hidden curriculum (bringing it to light), it can help to confirm that what has been planned has been done. But in no way ensures some kind of relationship with percentages of approval or better results by students. The transparency and the propose of a tool is a measure among others, not aiming to be a method of control, but to share the responsibility of training among all agents involved: students, teachers and managers.

A good teaching must be accompanied by a good work material, which should not be external to the academic that makes the class, so that the trainer is central in the chair. There are many ways to achieve competences in students, but in our opinion, the programs are designed in an ideal of students and academics. The foregoing should give value to training according to the specialty in which the student is being trained.

It is proposed to highlight the relevance of transparency in higher education in a context where society is tired of trusting others to do things, without being able to verify that they do them.

The transparentation of the formation and, even more, when it takes place in real time, allows and gives right to the main actors (students) to demand the totality of the processes that carry out during the formation of professional competitions during the formation of the engineers.

[Paulo Gonzalez Gutierrez]

ETHICAL VALUE OF TRANSPARENCY ON PROFESSIONAL FORMATION

There is nothing that can ensure transparency, but you can be aware of concepts about transparency. If transparency is used for the realization of a good, then not only takes an added value for the verification, but the engineer himself has it as a starting point. Then, transparency has a huge challenge, because apart from showing how things are done, requires the establishment of truthfulness.

As a future work, a discussion about the seal of each institution and how it is linked to the training part could be carried out, given that the stamp intervenes in the subject's personality according to his / her work. It is well known that the exit profile determines what the professional will be able to do, however, the seal is what marks the students during their training.

REFERENCES

[1] Araujo, R., Taher, Y., Heuvel, W., & Cappelli, C. (2013). Evolving government-citizen ties in public service design and delivery. In IFIP EGOV Conference (pp. 19–26). Citeseer.

[2] Bynum, T. (2008). Computer and information ethics, .

[3] Gracia, D. Procedimientos de decisión en ética clínica.

[4] Hayes, P. Information without borders: towards a framework for extraterritorial respect for the right to privacy. International Journal of Human Rights and Constitutional Studies 5, 1 (2017), 60–81.

[5] Holzner, B., and Holzner, L. Transparency in global change: the vanguard of the open society. University of Pittsburgh Pre, 2006.

[6] Hosseini, M., Shahri, A., Phalp, K., and Ali, R. Four reference models for transparency requirements in information systems. Requirements Engineering (2017), 1–25.

[7] Taddeo, M., and Floridi, L. The moral responsibilities of online service providers. In The Responsibilities of Online Service Providers. Springer, 2017, pp. 13–42.

[8] Turilli, M., and Floridi, L. The ethics of information transparency. Ethics and Information Technology 11, 2 (2009), 105–112.

[9] Vaccaro, A., and Madsen, P. Corporate dynamic transparency: the new ict-driven ethics? Ethics and Information Technology 11, 2 (2009), 113–122.

[Paulo Gonzalez Gutierrez]