

THE NECESSITY AND REQUIREMENTS FOR WOOD PROCESSING ENGINEERS IN SOME BUSINESSES OF TIRANA AND DURRES

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Abstract

In Albania exercise their activity a significant number of wood processing subjects mainly in Tirana, Durres and Fushe Kruja. In this sector, in addition to specialists and workers, there have been employed a number of Wood Processing Engineers. The perception by "manufacturing entities" for wood processing engineers, their adaptation to the labor market and needs of the latter, is the main purpose of the study. Data were collected through a structured questionnaire, designed for this purpose. The survey method chosen is the "face to face" method. The material prepared refers to 50 surveys carried out in the aforementioned area. There were selected the production entities operating in the field of manufacturing and marketing of furniture, prominent on the market. The surveyed were mainly wood processing engineers, production entities experienced executives, economists, etc., operating in the aforementioned area. Data were filed into a daTablease (Excel) wherein they are analyzed to generate the results shown in this material. The surveyed believe that the faculty must first prepare professionally trained engineers. They think that scientific and economic esTableishment also matter in the formation of engineers. The study shows that the people surveyed judge the professional side above the formation of engineers, compared with the overall formation. Subjects related to the field of architecture and interior designs are valued higher than others, particularly at Master levels. Among university training elements that outline the profile of the engineer, the surveyed people think that; Professional practice of students is very important. The surveyed also believe that professional practice must be accomplished in manufacturing, designing and the relationship with the client and it is better to be free of charge. The following columns are also considered as vital elements; Exercises, assignments and course projects. Knowledge of foreign languages and new technologies is considered very important for Wood Processing Engineers.

Key words: *questionnaire, manufacturing entity, market, wood processing.*

I. INTRODUCTION

The Wood Industry Department at the Faculty of Forestry Sciences operates on the basis of the curriculum, developed by the Academic Staff of the Department and approved by the Council of Professors and the University Senate.

On the other hand, in our country operate a significant number of wood processing production entities, with a geographical distribution across the territory. With regard to these subjects no accurate data exist in relation to their products (types), the number of engineers employed, needs for Wood Processing engineers and their qualities. The purpose of higher education, *inter alia*, is the preparation of specialists, in accordance with the market demands. Therefore, the aim of this study is: *To "absorb" the thought of production entities, to see to what extent the Bachelor and Master levels curriculum meet the market demands and provide its assistance in improving the curriculum.*

This will be achieved through contact via questionnaires among main wood processing entities in Albania, enabling the creation of a "Wood Processing Engineer Profile", as perceived by Manufacturing Entities. So what is the vocational, intellectual and scientific formation of a Wood Processing Engineer and what it should be in fact, according to the "opinion" of the market, as to match it properly? Further, the conclusion in the coverage of all information on creating a clear idea, of the opportunity to improve the curriculum of the Department of Wood Industry. *All this; How is it? How should it be?*

The Faculty performs its mission through the training it provides to the student throughout the educational process, practices etc. until finalization by receiving the engineer's diploma. This is considered a fulfillment of duties and/or responsibilities of the whole institution, unable to control their employment/performance, and it is exactly here that the problem resumes. Where will they be employed? What are the market demands? How many engineers are required? How will they be recruited? Therefore, these constitute a host of questions.

The main potential is the labor internal market. Employment opportunities in the state remain a few. Wood processing engineers consider as main employment opportunities the private woodworking / furniture entities (businesses created gradually after 90s). In this situation everything happens naturally, the market operates on the popular supply and demand principles, thus on the free market principles.

II. METHODOLOGY

The methodology followed for the implementation of this study is:

- Identification of entities operating in the wood processing industry for the area taken under study review.
- Development of questionnaires needed for this purpose, through which, all manufacturing entities express their opinion, regarding their needs for wood processing engineers and their field of specialization.
- Direct contact with the manufacturing entities through questionnaires, known as interviews / face to face surveys.
- Study of curriculum data used in the Department of Wood Industry and its evolution.
- Comparison of data and finding of adaptation ways.

III. DATA COLLECTION

Data were collected through a structured questionnaire for this purpose wherein are included open and filtering questions. The questionnaire intended to approach a common / usable format to enable the creation of a profile of the engineer as perceived by manufacturing entities/ the Market.

It contains general questions, to see the needs for engineers and the main focus is addressed to questions about their "training", including fundamental questions on the curriculum, as it is conceived by the manufacturing entities. This is for the reason of reconciliation with business requirements. For this purpose it is intended the opinion of specialists, especially when the entrepreneur himself is a Wood Processing Engineer.

The questionnaire includes all subjects making up the curriculum of Wood Industry Department at the Faculty of Forestry Sciences, both at Bachelor and Master study levels. Academic disciplines are grouped by similarity in; general training, basic engineering, vocational training and economy-business and other courses. Teaching elements are introduced as well; Exercises, practices and course projects. It is required an Assessment for foreign languages and the new technologies. Special attention is paid to Professional Practice; the manner and duration of its development, as well as the Diploma Thesis. The questionnaire concludes with an "open" question which requires a mindset of what should a Wood Processing Engineer should know.

IV. RESULTS AND DISCUSSION ON THEM

- **Employment in the area taken under study review**

The study presented includes some areas of Tirana and Durres, which together with the Fushe Kruja area constitute the main manufacturing and trading centers of furniture wherein operate a considerable number of businesses. Besides this fact, Tirana and Durres are the major centers in the country and as such they were selected also for conducting the research. Surveys were conducted mainly with entrepreneurs / managers of these entities, but in some cases, also with employees, engineers and economists. To create a clearer picture, the engineers who run the activity themselves, are also considered as employees. Tablele no. 1 provides data on the subjects surveyed (respondents).

Table 1. Summary data on the respondents

Code of the respondents	Total employed	Workers Specialists	Employed Engineers	Needs for Engineers
A001	7	6	1	0
A002	7	7	0	1
A003	4	4	0	0
A004	4	4	0	1
A005	10	10	0	1
A006	4	4	0	0
A007	8	8	0	1
A008	6	6	0	1
A009	4	4	0	1
A010	20	20	0	0
A011	18	17	1	0
A012	8	7	1	1
A013	4	4	0	1
A014	7	7	0	1
A015	60	56	4	0
A016	8	8	0	0
A017	60	58	2	0
A018	12	12	0	1
A019	12	11	1	1
A020	7	6	1	0
A021	13	12	1	1
A022	6	6	0	1
A023	8	8	0	1
A024	11	10	1	0
A025	4	4	0	1
A026	14	13	1	0
A027	13	11	2	0
A028	14	13	1	0
A029	40	39	1	1
A030	8	8	0	0
A031	13	12	1	1
A032	6	6	0	1
A033	12	12	0	0
A034	11	10	1	0
A035	4	4	0	1

A036	60	56	4	0
A037	30	30	0	1
A038	13	12	1	0
A039	40	39	1	0
A040	20	19	1	1
A041	10	10	0	1
A042	17	17	0	1
A043	33	32	1	0
A044	14	13	1	0
A045	40	38	2	0
A046	40	39	1	1
A047	20	19	1	0
A048	7	7	0	0
A049	40	40	0	1
A050	8	8	0	1
TOTAL	839	806	33	26

- **Occupation of the respondents**

50 surveys were conducted in total. The respondents result with different vocational, education and qualification training levels. Most of them, 74 percent of them are highly educated. Those of secondary education are specialists experienced in the field of Furniture. Below are provided the Occupations of the Respondents.

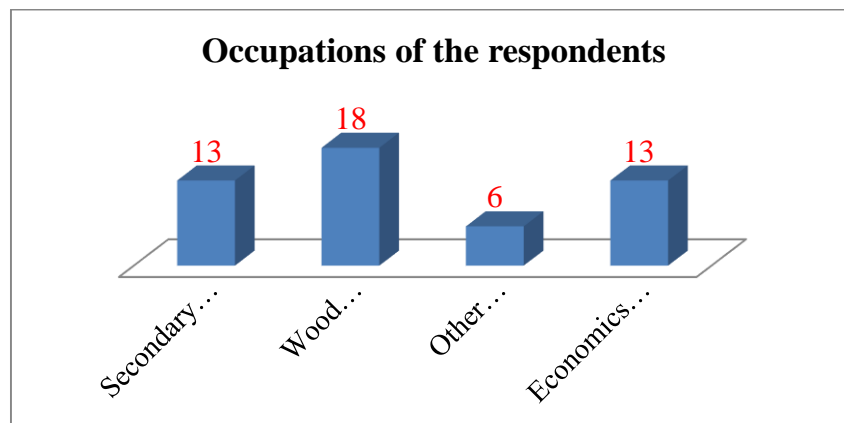


Figure 1: The respondents divided by occupation

- **Survey data for:**

- a. **Engineers' employment ratio**

In relation to other employees as specialists of long work experience, assistants, workers etc. Wood processing engineers result in a relatively small percentage as compared to the total number of employees in this sector. Data obtained from questionnaires show the following employment report (fig. 1.2)

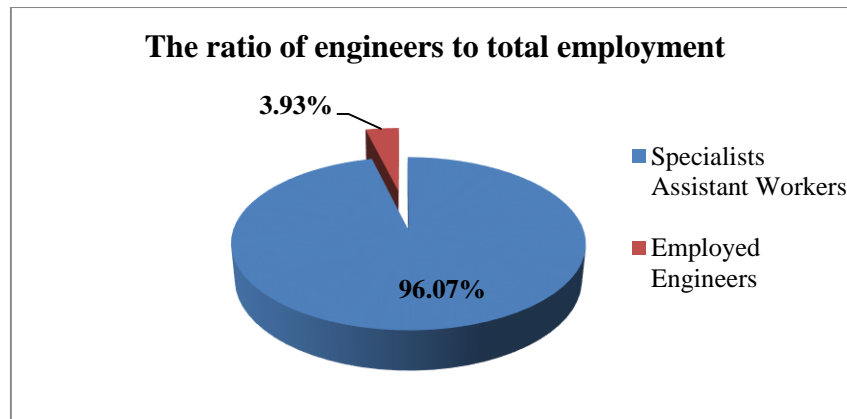


Figure 1.2: The ratio of engineers' employment as compared to the total number of employees

b. The need for engineers

The data show that: only to entities surveyed the needs for Wood Processing engineers are 26 engineers or about 3.1 percent more than the number of them currently employed.

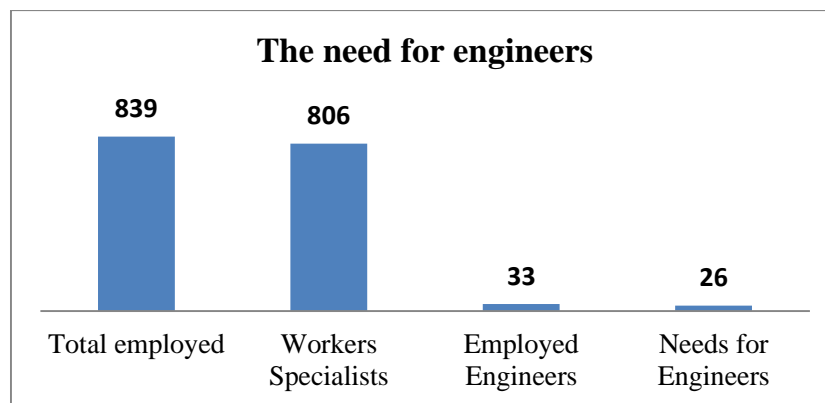


Figure 1.3: The number of employees and the need for engineers

- **Assessment of engineers' skills as perceived by the respondents**

In order for a wood processing engineer to be fulfilled in terms of overall training, it is essential to have knowledge of the fields of study such as: general, scientific, professional, cultural, management training etc. So of a variety of components that outline the profile of the engineer.

Given this, via a "filtering" and/or orientation question it is thought about the weight that each of these constituent components an engineer should have. This is done by asking respondents to assess the said matters in numbers, by their importance, starting from 1 to 6, where 1 is the highest rating and 6 the lowest.

In this paper we have considered only the assessment with 1. So we are referring only to cases estimated with one, which means as perceived by the respondents, to this issue it should be given more attention than all others, in other words, what should be more reflected in the

curriculum. Results, with their cumulative values are set in Table no. 2 and are reflected through a Pareto chart.

Table. 2: Some elements of qualitative training of wood processing engineers by maximum rating.

No	Components of Engineering Qualification	How many times was credited with 1	Assessment in %	Cumulative assessment	
				Cumulative No.	% Cumulative
1	Professional skills	37	74	37	74
2	General Knowledge	0	0	42	84
3	Knowledge of new technologies	1	2	46	92
4	Management skills	3	6	49	98
5	Business Knowledge (Market-Marketing)	4	8	50	100
6	Projecting Skills, scientific studies	5	10		
TOTAL		50	100	50	100

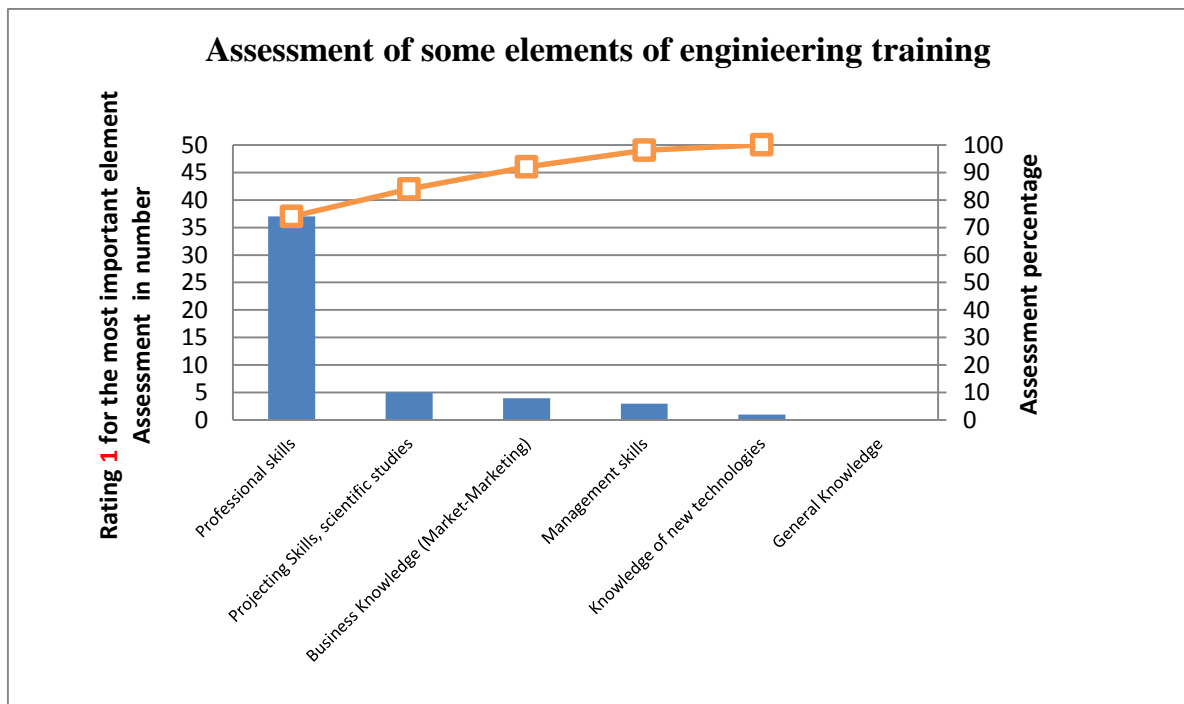


Figure 2: Some elements of the qualitative requirements of wood processing engineers' training assessed with 1

The above graphical presentation clearly and immediately shows the highest rating for the professional skills, followed by design and scientific research skills, thus the most "important" skills a wood processing engineer must have. This proves best the Pareto chart logic as well.

• **Curriculum assessment**

For the present case, given that it is a relatively small sample, it is made a generalized assessment for groups of subjects for both levels of study as:

- *General training subjects*
- *Basic training engineering subjects*
- *Business economy oriented subjects*
- *Vocational training subjects*
- *Other subjects that are practically optional.*

Data collected from the survey are thrown into a daTablease and it is conducted their analysis. For each of the groups, it is given the amount of assessment points and an overall average that shows how they are quoted by importance, as perceived by the respondents. For ease of calculation they are marked with numbers, because the assessment in the questionnaire is received in words; Paramount/5, Important/4 Less Important/3 and Insignificant/1. The results are summarized in the following Tableles.

Table. 3: Assessment by the respondents, for first level Bachelor curriculum subjects

Subjects taught in the first level Bachelor Scoring by importance, in increasing order 1, 3, 4, 5					
The grouping of subjects	General training subjects	Basic training engineering subjects	Business economy oriented subjects	Vocational training subjects	Other subjects
No of subjects	7	9	10	16	11
Total of points	1298	1789	1918	3420	1798
Overall average	3.708	3.97	3.836	4.275	3.269

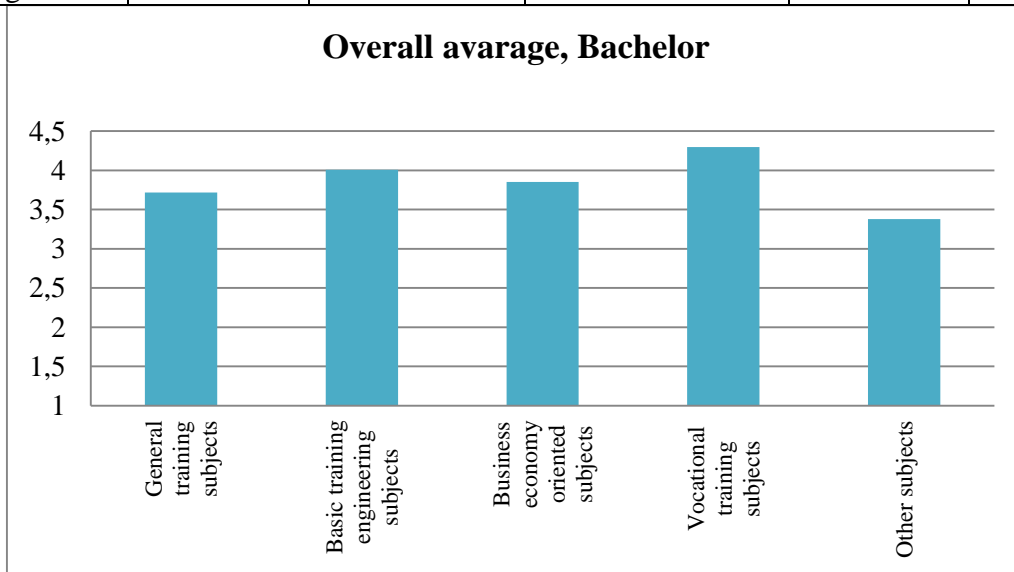


Figure 3: The overall average rating for first-level Bachelor courses

The graph clearly shows a higher rating for vocational training courses. The second in importance are listed the basic engineering courses tending again to professional subjects. Later, they classify the oriented-business economy courses. Less quoted are general training courses.

Table. 4: Assessment of the respondents, for courses in MSc level

Subjects taught in the Master of Science Scoring by importance, in increasing order 1, 3, 4, 5		
The grouping of subjects	General qualification subjects	Specialty subjects and other subjects
Number of subjects	8	11
Total of points	1542	2215
Overall average	3.855	4.0272

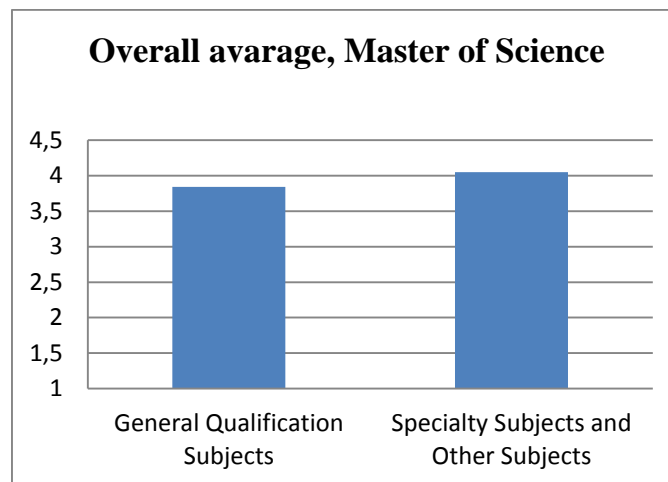


Figure 4: Assessment of the respondents, for courses in MSc level

As evident from the graph, in relation to MSc courses, respondents estimated above the specialty courses compared with the general training courses. So they think that the market needs engineers specialized in the field of Wood Industry, professionally trained.

Table. 5: Assessment of the respondents for Professional Master courses

Subjects to be developed in the Master of Professional Studies. Scoring by importance, in increasing order 1, 3, 4, 5		
The grouping of subjects	Engineering and architectural subjects	Engineering and other basic subjects
Number of subjects	6	7

Total of points	2540	2842
Overall average	4.233	4.06

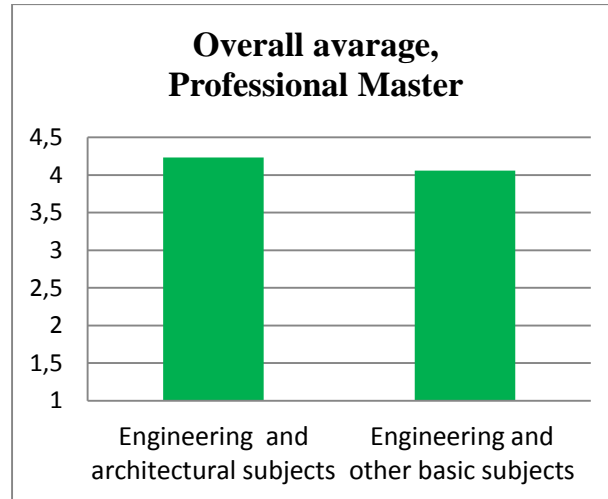


Figure 5: Assessment of the respondents for Professional Master courses

Professional Master Study, has aimed to get a preliminary assessment by the manufacturing entities because basically, this level of study has not yet been applied. Up to now it has been drafted the Curriculum for this level of studies and it is thought to be implemented soon. It is worth noting the importance given to architectural training.

- **Assessment of some elements of university training**

In the department of Wood Industry at the Faculty of Forestry Sciences in addition to education subjects/disciplines, dealing with theoretical aspects, the curriculum includes also: Course Exercises, Assignments and Projects, Practical Courses and Field Excursions, Professional Practice, Diploma Thesis. These are considered as components of university training (engineering) and constitute an important part of the curriculum in Bachelor and Master levels.

Table. 5: Assessment of the respondents, for columns; course exercises, assignments and projects, practical courses and field excursions, professional practice and Diploma thesis.

ASSESSMENT	Course exercises, assignments, projects	Practical courses and field excursions	Professional practice	Diploma Thesis
Paramount	25	24	40	24
Important	15	12	8	22
Less important	8	12	1	5
Insignificant	2	2	1	3
TOTAL	50	50	50	50

- **Examples on some estimates of respondents to the questions on: professional practice, diploma thesis and foreign language.**

<i>How can best be realized the professional practice of students?</i>					
Assessment	Total	Method of employment		Method of organization	
		Payment	No payment	In a group of students	Individually
Number	50	38	12	31	19
Percentage	100	76%	24%	62%	38%

<i>Where can best be accomplished the professional practice of students?</i>					
Assessment	Total	Under Manufacturing Process	In relationship with the client	In the designing process	In all jointly
Number	50	16	4	1	29
Percentage	100	32%	8%	2%	58%

<i>How important is knowledge of foreign languages for a wood processing engineer?</i>					
Assessment	Total	Very important	Important	Not very important	Insignificant
Number	50	20	25	3	2
Percentage	100	40%	50%	6%	4%

V. CONCLUSIONS AND RECOMANDATION

- In the area taken under review, a relatively low percentage of wood processing engineers is employed.
- Respondents estimate more the professional formation of engineers as compared with their general formation. Unlike the Bachelor curriculum, the contrast at both Master

levels is less visible although the tendency here is towards highest rating for professional training / specialty courses.

- The curriculum intended to be applied in the Professional Master is quoted a little higher as compared to the Master of Science. This assessment relates to the fact that the Professional Master is supposed to include disciplines of the field of architecture as well.
- Among the components of university training, Professional Practice of students is maximally estimated by most respondents.
- Diploma thesis as well as course exercises, assignments and projects are quoted from important to paramount by respondents.
- Respondents also believe that professional practice must be realized in manufacturing, designing and also in the relationship with the client (ie all together) and it is better to be conducted through paid employment.
- Knowledge of foreign languages is considered as paramount for the wood processing engineers.
- For the above, it becomes necessary, the strengthening of the interaction between University and business.
- There should be paid a maximum attention to the market, on its own specificity and to be fully consistent with its rapid development.
- There must be found mechanisms that set in motion the coordination of the market for the development of Professional Practice.

VI. REFERENCES

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